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Guide To Instrumentation Literature

United States Department of Commerce
National Bureau of Standards
Miscellaneous Publication 271

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NATIONAL BUREAU OF STANDARDS · A. V. Astin, *Director*

Guide To Instrumentation Literature

Julian F. Smith and W. G. Brombacher

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FOREWORD

In 1945 the Instruments and Regulations Division, American Society of Mechanical Engineers (ASME), issued a pamphlet, Sources of Information on Instruments. In 1952 Julian F. Smith of the Library of Congress prepared a guide and source list, Instrumentation Literature and its Use, for the Office of Basic Instrumentation, National Bureau of Standards.

Revision of the two publications was undertaken jointly by ASME and NBS, and the result was issued in 1955 as NBS Circular 567, Guide to Instrumentation Literature. Lyman Van der Pyl, for the Bibliography Committee of the Instruments and Regulators Division, ASME, participated in the revision. The Smith report was thoroughly revised, enlarged, and updated, but its list of instrument manufacturers (readily available elsewhere) was dropped.

The present Monograph is a revision of Circular 567. The announced objective of Circular 567 was to assist all persons "interested in utilizing the extensive and scattered literature of instrumentation." With the same objective, this revision has brought its literature coverage into 1964, while dropping older references now aging into obsolescence. The revision is part of a program of instrumentation research and development in the Basic Instrumentation Section under Joshua Stern, chief of the section.

A. V. Astin, Director.

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Contents (Cont.)

GUIDE TO INSTRUMENTATION LITERATURE

Julian F. Smith[1] and W. G. Brombacher[2]

Der Theoretiker alles weiss und nights kann.
Der Praktiker nichts weiss und alles kann.
German engineers' proverb.

Practice is blind without theory.
Theory is lame without practice.
Instrumentation version.

1. INTRODUCTION

NOTE: Abbreviations, chiefly for names of sponsoring or issuing organizations, are interpreted in 1.8.

This compilation is a source list of instrumentation literature, with a subject index and an index of personal and Corporate authors. Because instrumentation outcrops occur all through scientific and technical literature, two effects are noticeable:

a. Many entries, selected for useful ore content, do not look like pay dirt. Merit ratings might need defending, so none are offered.

b. Innumerable titles covering some ore content had to be omitted; overloading would add more hindrance than help.

In the conglomerate stratum between obviously rich and patently lean ores, doubtless some nuggets were missed and some fool's gold passed for real. As to thoroughness in the list, the survey of sources consulted (1.5) permits a rough assay.

1.1 OBJECTIVE.

Two concepts underlie this Guide:

a. Instruments serve to extend or refine human faculties of sensing and control beyond their unaided range of observation, measurement or computation.

b. Instrumentation comprises the art and science of designing, making, applying and operating instruments.

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1. Now at Lenoir Rhyne College, Hickory, North Carolina.

2. Consultant, NBS.

1.1 (Cont.)

The broad objective is to meet general and specific needs for aid in locating information on instrumentation; hence the emphasis on guides (2.4, 2.5, 2.6, 2.7).

1.2 SCOPE.

This Guide is a bibliography of literature which contains, or will aid in finding, instrument information. The aim is to list the principal sources which are directly pertinent, and selected related sources (e.g. in electronics, computers, metrology, etc.).

Literature coverage for patents and for medical instrumentation, intentionally scanty in Circular 567, is expanded here to allow for increasing quantity and pertinence of these areas. Patent literature is discussed in the introduction, as to character, extent and instrumentation significance. This is to encourage use of patents as primary sources of technical information, and inclusion of patent references in bibliographies.

Foreign languages receive less attention than English, since their publications are less readily accessible, and American linguistic skill is in short supply. No language is barred solely for unfamiliarity; foreign sources receive attention here about in proportion to their coverage in the sources consulted (1.5). This accounts for the prominence of Russian.

Major sources of translations are noted, e. g. by listing both titles of translated periodicals (mostly Russian) and books. Foreign language titles are transliterated when necessary, but are not translated (explanatory notes are sometimes added). Japanese and Chinese sources are increasingly prolific in instrumentation through the past decade.

1.3 KINDS OF LITERATURE.

Varieties of instrumentation literature, and some selection criteria for entry here, are:

a. Books, manuals, reference works, data compilations (generally omitting undergraduate textbooks).

b. Publications offering abstracts or indexes, when coverage includes instrumentation.

c. Periodicals, including a few house organs having substantial technical content.

1.3 (Cont.)

d. Bibliographies and indexes, including some which list technical reports.

e. Buyers' guides, exhibit guides, directories of manufacturers.

f. Guides to dissertations, patents, standards, etc., and to branches of science literature(chemistry, physics, engineering, etc.).

These types of literature are excluded:

a. Separates (patents, dissertations, governmental and institutional bulletins, technical reports, etc.). Some guides, abstracts and indexes covering separates are listed.

b. Trade literature (catalogs, fliers, instruction manuals and non-technical house organs).

c. Trivia and ephemera.

1.4 TIME COVERAGE.

Books subject to obsolescence are listed only from about 1950; most entries are less than 10 years old. Some are still in preparation (1964). Some lastingly useful publications are entered regardless of age. Beginning dates of serials (even into previous centuries), and time coverage of bibliographies, are noted when known.

1.5 SOURCES CONSULTED.

Reference sources of these types were used:

a. Card catalogs and appropriate shelves in LC, NBS Library, USPOL and NLM.

b. Book reviews and publishers' announcements (taken as found, not systematically searched).

c. Pertinent subject sections in catalogs (1962-64) of domestic and foreign publishers of technical books.

d. Accession lists, NBS Library.

e. Selected sources from those listed in 2.6 and 2.7.

1.6 INSTRUMENTATION IN THE LITERATURE

Each type of instrumentation literature has its own characteristics to guide inquirers. Examples:

1.61 ABSTRACT JOURNALS

a. Biological Abstracts: Microscopy; medical instrumentation; devices for animal tests; marine biology.

b. Chemical Abstracts and Chemisches Zentralblatt: Apparatus; process automation and control; photography; instruments for radiation and subatomic phenomena; instrumental analysis.

c. Physics Abstracts and Electrical Engineering Abstracts (rich in instrumentation): laboratory instruments; electrical and electronic devices.

d. Engineering Index (subject-classified): numerous subclasses for instrumentation.

e. Nuclear Science Abstracts: instruments for atomic and subatomic phenomena.

1.62 PERIODICALS. There is no fixed census of scientific and technical periodicals; rates of birth and death are too high. The latest World List of Scientific Periodicals has about 60,000 titles; instrumentation topics may appear in any or all of them. Selections for entry were based on pertinent content (not necessarily in predominance) useful to instrumentation searchers. Discontinued titles are omitted unless they have lasting utility. Collective indexes, covering periods of 5 to 50 years, are noted in periodical entries. Serials (often annual or biennial) are entered as periodicals.

1.63 TECHNICAL REPORTS, too numerous to enter here, are omitted, with only a few exceptions made for special reasons. The bibliographic aids supplied by DDC, OTS, AEC and NASA are in general sufficient for finding reports. Outside of security-classified areas, these aids are publicly available (2.1). They have little foreign coverage; various European agencies serve as guides to foreign reports, e.g. DSIR (Great Britain), CNRS (France), TNO and NIDR (Netherlands). None will publicly disclose reports which are under security wraps.

1.64 SEPARATES. Legions of separates, often in numbered or coded series, are issued by international, national or regional governments and private organizations. Technical societies, trade associations, academic or scientific institutions, and standardizing bodies (ASA, ASTM, ISO, BSI, DNA, etc.) all contribute. Many separates are important monographs. Only a few outstanding titles have been entered; searchers should consult guides and indexes (2.2, 2.4, 2.6, 2.7), or publication lists of issuing organizations.

1.65 PATENTS.

1.651 Extent of Patent Literature. Great Britain (1617-), the U. S. (1789-), France (1791-) and Germany (1877-) all are in the million-patents class:

a. Great Britain, average about 60 per year, 1617-1852; about a million in series renumbered annually, 1853-1915; over 800,000, 1916-64.

b. U. S. (present numbering from 1937), passed number 3,100,000 in August, 1963.

c. France and Germany, numbering passed a million in the 1950's.

There are now two German patent offices (DPA, Munich, and DDR, East Berlin). The DDR (around 40,000 patents up to 1964) distinguishes between Ausschliessungspatente and Wirtschaftspatente, probably imitating the Soviet distinction between "patents" and "certificates" of invention. Several European nations open pending applications to public opposition (DPA calls them Auslegeschriften). Even their rejected applications are sources of technical information.

Of more than a hundred patent offices, most do not issue printed copies (Canada not till 1948, Belgium not till 1950). Hardly more than a score issue patents meriting an instrumentation search. Holland (1912-) copyrights its printed applications and patents. The Swiss Patentamt is trilingual (German, French, Italian); Canadian patents are usually in English, but sometimes in French. The Soviet patent office (1924-) is far more active than was the Czarist patent office (1813-1917).

Among patent gazettes of small nations which merit careful attention for instrumentation are those of Holland, Belgium, Switzerland and Scandinavian nations. Concentration in these nations on utilizing their engineering talent leads to relatively high instrumentation activity. Thus, printed Swedish patents in their Class 42 (precision instruments), 1885-1964, fill about 50 bound volumes (POSL).

1.652 Searching. Instrument patents are best searched through official subject classifications. Being mainly functional, the U. S. classification enters instruments by purpose served, not by structure. The looseleaf manual, under constant revision, indexes thoroughly its more than 400 classes and its thousands of subclasses.

Instrumentation, being as heterogeneous as the useful arts, is inevitably scattered in all patent classifications. Poor indexing intensifies a searcher's difficulties; he must contribute his due share of patience, skill and care.

The base for the present U. S. classification was adopted in the 1870's. Then new, DPA (1877-) picked up the discarded base, followed in later years by several other European nations (the Soviet Union most recently). Greatly elaborated, classifications on the old base are now much used in Europe.

1.652 (Cont.)

The British, French and Swiss classifications are individualistic; Canada follows the U. S. rather than the British scheme. Revision is less active in these nations than in the USPO. Britain, Germany and Switzerland index their classifications well, France less thoroughly. Though POSL has a manuscript translation of the French classification, searching French patents by classes is tedious. Their instruments class is poorly defined and includes musical instruments.

Published claims or abridgments of patents are usually not well indexed; as exceptions, BPO and DPA provide excellent subject indexes of abridgments. The U. S. and Canada issue only indexes based on titles, offering searchers little aid and no comfort. Search room practice (POSL) helps by filing cross references when a patent pertains to more than one class. For small patent offices which issue no indexes, output is small and classwise searches are usually brief.

The International Patent Classification, Convention of December 19, 1954, is not a searching aid, but an avowed first step toward European patents under one European patent law. In its first decade its adherents are Common Market and Outer Seven nations. None has yet discarded its own classification to adopt the International system, but member nations print the International class number, along with the class number in their own system, on copies of patents. The full text of the International Patent Classification, in English, French and German) can be had as a separate. Gazettes of member patent offices(e. g. Bulletin officiel) print the full text at intervals.

1.653. Gazettes are weekly in large patent offices. Some carry printed claims or abridgments; others are confined to official notices, leaving the abridgments to a separate publication. France published no abridgments till 1958; its Abreges descriptifs (2.8) was a supplement to Bulletin officiel, 1958-59, but was separated in 1960. The British Abridgments were separated years ago from the Official Journal (2.8).

1.654. Unofficial aids (periodicals, card services, machine-coded records) come mainly from private enterprise. The sputnik-sparked interest in translating Russian extends even to rival translations from the Soviet Byulletin Izobretenii (2.8). Some first-claim translations from patents of Scandinavian countries, DDR, Poland and USSR are in the POSL files.

Leading sources of published patent abstracts include Chemical Abstract and Chemisches Zentralblatt (excellent coverage in chemical instrumentation) Solid State Abstracts (semiconductors); and Nuclear Science Abstracts (nucle onics). Lacking any comprehensive source for abstracts of instrument patent searchers must rely on scattered sources.

1.655 Mechanized searching in the USPO now covers all steroid patents, coded so that examiners now search only by machine. Coding is in progress (1964) for electronics and some areas of inorganic chemistry. The ultimate but distant goal is to code the entire subject classification, passing gradually from manual searching to total mechanization.

1.656 Patentability. Allowance by examiners, and grants by the Patent Office, do not guarantee validity of patents. A court may declare a litigated patent invalid for any of various reasons, such as prior art unknown to the examiner. Laws or principles of nature, and discoveries in pure theory, are not patentable. True, a half century ago one Scofield succeeded in patenting two pet theological doctrines under the guise of educational toys; but the rule remains. To be patentable an invention must be novel (not published up to a year before the application was filed), not contrary to public morals, and useful.

1.66 DISSERTATIONS. Academic concentration on pure theory in doctoral dissertations is archaic; theory moved over long ago to give practice a seat. Interest in and attention to instruments increased. Many theses reach the periodical press only in part, many not at all; abstract journals commonly ignore them. Hence published subject indexes can give them only scanty coverage. Like patents and other separates, dissertations often contain significant new information about instrumentation. They are traced best through the aids listed in 2.4.

1.67 BUYERS' GUIDES. Industries served by trade journals which depend much on advertising income are well supplied with buyers' guides, exposition guides, etc. Conspicuous among them, for instrument interests, are chemical processing, electronics, electricity, machinery, and instruments themselves. Only major examples are cited in 2.5.

1.68 LITERATURE GUIDES. Chemistry has had its literature guides since before World War I; physics, mathematics and engineering followed suit between the world wars. Nontechnical subject areas had much older guides, and new ones still appear. In fast-moving arts and sciences the guides are plagued by early obsolescence, a syndrome to which this one has no immunity. General instructions in literature searching (see references cited in 2.6) are good also for instrumentation searches. Only major aids are cited.

1.7 ARRANGEMENT OF ENTRIES.

Sources of instruments information are entered by types, subdivided by subjects in small searchable groups (mostly not over about 30 entries). Some voluminous subjects are broken down geographically: A = United States, B = other English-language sources, C = Western Europe, D = all other origins.

Sequence within subdivisions is random, so that late entries change only spacing, not arrangement. The classification code appears in the Table of Contents. Entries too late to classify are in 2.10.

1.8 ABBREVIATIONS.

Names of publishers and of sponsoring organizations (largely scientific or technical societies and government agencies) are abbreviated in this Guide, and in the index entries for corporate authors. The abbreviations, in alphabetical order, are interpreted here. Location is usually indicated, but is commonly uncertain and often omitted for international unions of societies. Berlin means West Berlin; **East Berlin** or Berlin (DDR) means Communist-controlled Berlin.

AAAS: American Association for the Advancement of Science, Washington
AAS: American Astronautical Society, Baltimore
ABS: American Bibliographic Service, Darien, Connecticut
ACeS: American Ceramic Society, Columbus
ACGIH: American Conference of Governmental Industrial Hygienists, Cincinnati
Achema: See Dechema
ACM: Association for Computing Machinery, New York
ACS: American Chemical Society, Washington
AcSA: Acoustical Society of America, **New York**
Addison: Addison-Wesley Publishing Co., Inc., Reading, Mass.
AEC: Atomic Energy Commission, Washington
AED: Zentralstelle Atomkernenergie-Dokumentation (Gmelin Institut), Frankfurt a/m
AEG: Allgemeine Elektrizitäts-Gesellschaft, Berlin
AEI: Associazione elettrotecnica italiana, Milan
AEI Ltd: Associated Electrical Industries (Manchester) Ltd.
AERE: Atomic Energy Research Establishment, Harwell, England
AES: Audio Engineering Society, New York
AES Japan: Atomic Energy Society of Japan, Tokyo
AF: U. S. Air Force
AFN: Association Francaise de Normalisation, Paris
AFOSR: Air Force Office of Scientific Research, Washington
AGARD: Advisory Group for Aeronautical Research and Development, Washington
AGET: Advisory Group on Electron Tubes, DOD, Washington
AGI: American Geological Institute, Washington
AGU: American Geophysical Union, Washington
AI: American Instrument Co., Silver Spring, Maryland
AIAA: American Institute of Aeronautics and Astronautics, New York (merger of Institute of Aerospace Sciences and American Rocket Society)
AIChE: American Institute of Chemical Engineers, Philadelphia
AID: Aerospace Technology Division, Library of Congress, Washington
AIEE: American Institute of Electrical Engineers, New York (merged, 1962, with IRE as IEEE).

AIMME: American Institute of Mining and Mining and Metallurgical Engineers, Dallas. (see also AIMMPE).

AIMMPE: American Institute of Mining, Metallurgical and Petroleum Engineers, Philadelphia. (Petroleum was added to the name AIMME in 1956).

AIP: American Institute of Physics, New York

Air Univ: Air University Library, Maxwell Air Force Base, Alabama

Akademie: Deutsche Akademie der Wissenschaften (Berlin) and its Akademie-Verlag

Akademische: Akademische Verlagsgesellschaft Geest und Portig, Leipzig, (DDR).

ALA: American Library Association, Chicago

Allyn: Allyn & Bacon, Inc., Englewood Cliffs, N. J.

AMA: American Medical Association, Chicago

American Aviation: American Aviation Publications, Inc., Washington

AMaS: American Mathematical Society, Providence

AMeS: American Meteorological Society, Washington

AMiS: American Microscopical Society, Ann Arbor

AN: Akademiya Nauk SSSR, Moscow (Academy of Sciences,USSR).

ANIDEL: Associazione Nazionale Imprese Produttrici e Distributrici di Energia Elettrica, Rome

ANL: Accademia Nazionale dei Lincei, Rome

APL: Applied Physics Laboratory, Silver Spring, Md.

Arnold: Edward Arnold & Co., Ltd., London W.1.

ARS: American Rocket Society, New York (also see AIAA)

ASA: American Standards Association, New York

ASE: Association Suisse des Electriciens, Zurich

ASEA: Allmänna Svenska Elektriska Aktiebolaget, Västeras

ASHAE: American Society of Heating and Airconditioning Engineers, New York

ASM: American Society for Metals, Novelty, Ohio

ASME: American Society of Mechanical Engineers, New York

ASP: American Society of Photogrammetry, Washington

ASQC: American Society for Quality Control, Milwaukee

ASRE: American Society of Refrigerating Engineers, New York

ASTIA: Armed Services Technical Information Agency, Arlington. (name changed 1963, to Defense Documentation Center for Science and Technology, DDC).

ASTM: American Society for Testing and Materials, Philadelphia (and added to the name, 1961).

AUDD: Association pour l'Utilisation et le Diffusion de la Documentation, Lyons

AVS: American Vacuum Society, New York

Barth: Johann Ambrosius Barth Verlag, Leipzig

BCIRA: British Cast Iron Research Association, Birmingham

BCS: British Computer Society, London
BCeS: British Ceramic Society, London
BEAMA: British Electrical and Allied Manufacturers' Association, London
Beckman: Beckman Instruments, Inc., Richmond, California
Bell: G. G. Bell and Sons, Ltd., London
Bell Labs: Bell Telephone Laboratories, New York
Benjamin: W. A. Benjamin, Inc., New York
Benn: Ernest Benn, Ltd., London
Beuth: Beuth-Vertrieb G.m.b.H., Cologne
BGPC: Bunsengesellschaft für physikalische chemie, East Berlin
BHI: British Horological Institute, London
BHRA: British Hydromechanics Research Association, Harlow
BIRE: British Institution of Radio Engineers, London
BIS: British Interplanetary Society, London
Blackwell: Blackwell Scientific Publications, Oxford, England
BLS: U. S. Bureau of Labor Statistics, Washington
BMI: Battelle Memorial Institute, Columbus
BNES: British Nuclear Energy Society, London
Bowker: R. R. Bowker Co., New York
Bowman: Bowman and Littlefield, Inc., New York
BPI: Brooklyn Polytechnic Institute
BPO: British Patent Office, London
BRL: Ballistic Research Laboratories, Aberdeen Proving Ground
BSI: British Standards Institution, London
BSIRA: British Scientific Instruments Research Assn., London
BSR: British Society of Rheology, Pontypool
BuAer: U. S. Navy Bureau of Aeronautics, Washington (merged into Bureau of Naval Weapons)
BuOrd: U. S. Navy Bureau of Ordnance, Washington (merged into the Bureau of Naval Weapons)
BuShips: U. S. Navy Bureau of Ships, Washington
BuWeaps: U. S. Bureau of Naval Weapons, Washington (merger of BuOrd and BuAer).
Butterworth: Butterworth Publications, Ltd., London and Washington
California: University of California Press, Berkeley
Cambridge: Cambridge University Press, Cambridge, England
CAV: Ceskoslovenska Akademie Ved (Czechoslovak Academy of Science) Prague
CGS: U. S. Coast and Geodetic Survey, Washington
Chapman: Chapman and Hall, Ltd., London
Chemical: Chemical Rubber Publishing Co., Cleveland

Chicago: University of Chicago Press
Chilton: Chilton Co. Book Division, Philadelphia
CIIPN: Centro de Investigacion del Instituto Politecnico Nacional, Mexico City
CIRP: College International Recherche Production (International Institution for Production Engineering Research)
CISE: Centro Informazione Studi Esperienze, Milan
Clarendon: Clarendon Press, New York (for **Oxford** University Press)
Cleaver-Hume: Cleaver-Hume Index Offices, London
CLS: Central Library of Spectroscopy, **Ellicott City, Md.**
CMA: Canadian Manufacturers' Association, Toronto
CNET: Centre Nationale d'Etudes des Telecommunications, Issy-les-Molineaux
CNRS: Centre Nationale de Recherche Scientifique, Paris
Columbia: Columbia University (including Columbia University Press) New York
Constable: Constable & Co., Ltd., London
Consultants: Consultants Bureau, New York (see also Plenum)
COSPAR: Committee on Space Research (ICSU), Paris
Crosby: Crosby Lockwood and Son, Ltd., London
CSIRO: Commonwealth Scientific and Industrial Research Organization, East Melbourne, Australia

DATA: Derivation and Tabulation Associates, Inc., Orange, N.J.
DAW: Deutsche Akademie der Wissenschaften (West Germany)
DBP: Deutsche Bundespost
DDC: Defense Documentation Center for Science and Technology, Arlington
DDR: Deutsche Demokratische Republik (East Germany), including its Patent Office in East Berlin.
Dechema: Deutsche Gesellschaft für chemisches Apparatewesen, Frankfurt a/M. (Publisher of Achema Jahrbuch).
de Gruyter: W. de Gruyter Verlag, Berlin
Derwent: Derwent Information Service, London
DIN: Deutsche Industrienormen, issued by Deutsche Normenausschuss (DNA), Berlin. (German Industrial Standards)
DMA: Deutsche Messe- und Ausstellungs Aktiengesellschaft, Hannover
DMPA: Deutsche Materialprüfungsanstalten, Berlin
DNA: Deutsche Normenausschuss, Berlin. See Also DIN.
DO: Dominion Observatory, Ottawa
DOD: Department of Defense, Washington
DOFL: Diamond Ordnance Fuze Laboratories, Washington (Army Materiel Command). (Name changed 1963, to Harry Diamond Laboratories).

Dover: Dover Publications, Inc., New York
DPA: Deutsches Patentamt, Munich
DPG: Deutsche physikalische Gesellschaft, Berlin
DRG: Deutsche rheologische Gesellschaft, Berlin
DSIR: Department of Scientific and Industrial Research, London
DT: Dokumentation der Technik, Munich
DuMont: Allen B. DuMont Laboratories, Inc., Clifton, N. J.
Dunod: Dunod Editeur, Paris
DVL: Deutsche Versuchsanstalt für Luftfahrt, Braunschweig
DVM: Deutscher Verband für Materialprüfung, Berlin
EEG: Electroencephalograph(y)
EIA: Electronic Industries Association, New York
EL: Electrotechnical Laboratory, Agency of Industrial Science and Technology, Tokyo
Elsevier: Elsevier Publishing Co., New York and Amsterdam
Engelhard: Instruments and Systems Section, Engelhard Industries, Inc., Newark, N.J.
EOQC: European Organization for Quality Control, Rotterdam
ES: Electrochemical Society, New York
ES (Japan) Electrochemical Society of Japan, Tokyo
ESL: Engineering Societies Library, New York
Eyrolles: Editions Eyrolles, Paris

Felten: Felten und Guilleaume Carlswerk Aktiengesellschaft, Cologne
FID: Federation International de Documentation, The Hague
Fromme: Verlag Georg Fromme & Co., Vienna

GAFC: General Aniline and Film Corp., Binghampton, N. Y.
GAMS: Groupement pour l'Avancement des Methodes Spectrographiques, Paris
Gauthier: Gauthier-Villars, Editeur, Paris
GDC: Gesellschaft deutscher Chemiker, Frankfurt
GE: General Electric Co., Schenectady
GEC: General Electric Co., Ltd., London
Girardet: W. Girardet Verlag, Essen
Gmelin: Gmelin-Institut für anorganische Chemie und Grenzgebiete, Max Planck Gesellschaft zur Forderung der Wissenschaften, Frankfurt a/M
Gordon: Gordon and Breach, Science Publishers, New York
GPO: Government Printing Office, Washington
Griffin: Chas. Griffin & Co., Ltd., London
Gulf: Gulf Publishing Co., Houston
Hafner: Hafner Publishing Co., New York

Hansea-
tische: Hanseatische Verlagsanstalt, Hamburg
Harper: Harper and Row, Publishers, New York
Harvard: Harvard University Press, Cambridge
Hayden: Hayden Book Co., New York
HDL: Harry Diamond Laboratories, Army Material Command, Washington (Until 1963 the name was Diamond Ordnance Fuze Laboratories, DOFL).
Heine-
mann: Wm. Heinemann, Ltd., London
HEW: Health, Education and Welfare Dept., Washington
Heymann: Carl Heymanns Verlag K.-G., Munich
Heywood: Heywood & Co., Ltd., London
Hilger: Hilger and Watts, and Adam Hilger, Ltd., London
Hirzel: S. Hirzel Verlag, Zurich and Stuttgart
Hoepli: Edizione Hoepli, Milan
Holt: Holt, Rinehart & Winston, Inc., New York
Horizon: Horizon House-Microwave, Inc., Brookline, Mass.
Hutchin-
son: Hutchinson & Co. (Publishers) Ltd., London W.1

IAEA: International Atomic Energy Agency
IAF: International Astronautical Federation, Vienna
IAS: Institute of the Aerospace Sciences, New York (see also AIAA)
IBM: International Business Machines Corp., New York
ICC: International Computation Center, Rome
ICF: Institut de Ceramique Francaise, Paris
ICI: International Commission (formerly Congress of) Illumination
ICPUAE: International Congress on Peaceful Uses of Atomic Energy
ICSU: International Council of Scientific Unions
ICVT: International Congress on Vacuum Techniques
IE: Institution of Engineers (Australia) Sydney
IECE: Institute of Electrical Communication Engineers of Japan, Tokyo
IEE: Institution of Electrical Engineers, London
IEEE: Institute of Electrical and Electronics Engineers, New York. (merger, 1962, of AIEE and IRE)
IEE
Japan: Institute of Electrical Engineers of Japan, Tokyo
IES: Illuminating Engineering Society, London
IF: Institute of Fuel, London
IFAC: International Federation of Automatic Control, Brussels
IFIP: International Federation for Information Processing
IGT: Institute of Gas Technology, Chicago
II: Information for Industry, Washington
IS: Indian Institute of Science, Bangalore
Illinois: University of Illinois Press, Urbana

IM: Institute of Metals, London
IME: Institution of Mechanical Engineers, London
IMEKO: Internationale Konferenz für Messtechnik und Gerätebau
Indiana: Indiana University Press, Bloomington
Industrial: Industrial Press, New York
INSBK: Institute of Nuclear Sciences Boris Kidrich, Belgrade
Instruments: Instruments Publishing Co., Pittsburgh
Interkama: Internationaler Kongress mit Ausstellung für Messtechnik und Automatik, Düsseldorf
Interpas: International Patent Service Naamlooze Vennootschap, Den Bosch, Netherlands
Interscience: Interscience Publishers, New York (Div. of John Wiley and Sons)
IP: Institute of Physics, London
IPC: International Patent Classification
IPI: International Physical Index, Inc., New York
IRAM: Instituto Argentino de Racionalizacion de Materiales, Buenos Aires
IRE: Institute of Radio Engineers, New York (merged 1962, with AIEE as IEEE)
IRI: Industrial Research Institute, Osaka, Japan
IRE: Industrial Research Service, Dover, New Hampshire
ISA: Instrument Society of America, Pittsburgh
IScI: Institute for Scientific Information, Philadelphia
ISI: Indian Standards Institution, Delhi
ISO: International Standards Organization
ISTI: Institute for Scientific and Technical Information of China, Peking
ITC: International Training Center for Aerial Survey, Delft
ITT: Institute of Textile Technology, Charlottesville, Va.
I Tel Tel: International Telephone & Telegraph Corp., New York
ITU: International Telecommunication Union, Geneva
IUC: International Union of Crystallography
IUPAC: International Union of Pure & Applied Chemistry, Paris
IVA: Ingeniörs Vetenskapsakademien, Stockholm
IWB RATEM: Institut für wissenschftliche Berichterstattung RATEM, Vienna. RATEM = Radio,Iontechnik, Elektromedizin
IWMA: Institute of Weights and Measures Administration, Manchester

JCL: John Crerar Library, Chicago
JPL: Jet Propulsion Laboratory, Pasadena
JPRS: Joint Publications Research Service, Washington

JSASS: Japan Society for Aeronautical and Space Sciences, Tokyo
JSME: Japan Society of Mechanical Engineers, Tokyo
JSTM: Japan Society for Testing Materials, Tokyo

Knapp: Knapp Verlag, Düsseldorf
Kodak: (Eastman) Kodak Research Laboratories, Rochester
Krupp: Friedrich Krupp Aktiengesellschaft, Essen
Kyushu: Kyushu University, Fukuoka

LA: Library Association, London
LC: Library of Congress, Washington
Leemann: Gebrüder Leemann and Co., Zurich
LKB: LKB-Produkter Aktiebolaget, Stockholm
Longmans: Longmans, Green & Co., Ltd., London and New York

Macdonald: Macdonald & Co. (Publishers) Ltd., London
MBLE: Societe anonyme MBLE Manufacture Belge de Lampes et de Materiel Electronique, Brussels
Macmillan: Macmillan Co., New York and London
Marconi: Marconi Wireless Telegraph Co., Ltd., Chelmsford
Maryland: University of Maryland, College Park
MB: Munitions Board, Washington
McGraw-Hill: McGraw-Hill Book Co., New York
Merrill: Chas. E. Merrill Books, Inc., Columbus
Methuen: Methuen & Co., Ltd., London
M-H: Minneapolis-Honeywell Regulator Co., Minneapolis
Microfilms: University Microfilms, Ann Arbor
MIRA: Motor Industry Research Association Lindley (England)
MIT: Massachusetts Institute of Technology, Cambridge (including MIT Press)
Moraine: Editions la Moraine, Geneva
Mouton: Mouton & Co., The Hague
MPI: Max Planck Institut für Stromungsforschung, Gottingen
MRI: Microwave Research Institute, Brooklyn

NACA: National Advisory Committee for Aeronautics (now NASA) Washington
NACE: National Association of Corrosion Engineers, Houston
NAS-NRC: National Academy of Sciences and National Research Council, Washington
NASA: National Aerospace Sciences Administration, Washington see also NACA
Nauk: Akademiya Nauk SSSR (Academy of Sciences USSR), Moscow

Navord: Navy Bureau of Ordnance, Washington (merged into Bureau of Naval Weapons)
NCO: Nederlandse Centrale Organisatie, Delft **(see also TNO)**
NEF: Norsk Elektroteknisk Forening, Oslo
NFS: Norsk Fysisk Selskap, Tronheim
NFSAIS: National Federation of Science Abstracting and Indexing Services, Washington
NIDA: Norwegian Industries Development Association, Oslo
NIDR: Nederlandsch Instituut voor Documentatie en Registratuur, The Hague
NIH: National Institutes of Health, Bethesda
NLL: National Lending Library for Science and Technology, Boston Spa, England
NLM: National Library of Medicine, Bethesda
NNES: National Nuclear Energy Series
Northwestern: Northwestern University Press, Evanston
NPL: National Physical Laboratory, London
NRC: see NAS-NRC
NRLM: National Research Laboratory of Metrology, Tokyo
NSF: National Science Foundation, Washington
NYSEM: New York Society of Electron Microscopists

OAR: Office of Aerospace Research, Washington
OECD: Organization for Economic Cooperation and Development, Paris
Ohio: Ohio State University, Columbus
Oldenbourg: R. Oldenbourg Verlag, Munich
ONERA: Office National d'Etudes et de Recherches Aerospatiales, Paris
ONR: Office of Naval Research, Washington
Oosthoek: Naamlooze Vernnootschap A. Oosthoek Uitgevers Maatschappij, Utrecht
OSA: Optical Society of America, New York
OTS: Office of Technical Services, Department of Commerce, Washington
Oxford: Oxford University Press and Clarendon Press, New York

PAL: Pacific Aerospace Library, IAS, Los Angeles
PDC: Prevention of Deterioration Center, NRC, Washington
Penn: University of Pennsylvania, Philadelphia
Penton: Penton Publishing Co., Cleveland
Pergamon: Pergamon Press, New York
Philips: Philips Gloeilampenfabrieken, Eindhoven

Pitman: Sir Isaac Pitman and Sons, Ltd., London, and Pitman Publishing Corp., New York

PL: Philosophical Library, New York
Plenum: Plenum Press, Inc., New York (subsidiary of Consultants' Bureau)
POSL: Patent Office Scientific Library, Washington
Prentice-Hall: Prentice-Hall, Inc., Englewood Cliffs, New Jersey
Preston: Preston Technical Abstracts Co., Evanston, Illinois
Princeton: Princeton University Press, Princeton
PS: Physical Society, London
PSAC: President's Science Advisory Committee, Washington
PS (Japan): Physical Society of Japan
PTBA: Physikalisch-technische Bundesanstalt (formerly Reichsanstalt), Braunschweig
PTT: Schweizerische Post-, Telephon- und Telegraphen-Betrieben, Bern
Purdue: Purdue University, Lafayette, Indiana

RAeS: Royal Aeronautical Society, London
Rand: Rand Corporation, Santa Monica, Calif.
Random: Random House, Inc., New York
RAS: Royal Astronomical Society, London
RATEM: see IWB RATEM
RCA: Radio Corporation of America, Harrison, N. J.
Reinhold: Reinhold Publishing Corp., New York

RIAM: Research Institute for Applied Mechanics (Japan) Kyushu University
Rider: John F. Rider, Publisher, Inc., New York City
RILEM: Reunion International des Laboratoires d'Essais et de Recherches sur les Materiaux et les Constructions, Paris. (Affiliate of International Association of Testing and Research Laboratories for Materials and Structures).
RIMR: Rockefeller Institute for Medical Research, New York
RMS: Royal Meteorological Society, London
RMiS: Royal Microscopical Society, London
Ronald: Ronald Press Co., New York
RPS: Royal Photographic Society, London
RRE: Radar Research Establishment, Malvern, England
RSL: Royal Society of London
RTI: Research Triangle Institute, Durham, N. C.

SAA: Standards Association of Australia, Sydney
SAC: Society for Analytical Chemistry, London
SAE: Society of Automotive Engineers, New York
Sams: Howard W. Sams & Co., Indianapolis
SAS: Society for Applied Spectroscopy, Bound Brook, N. J.

SEE: Society of Electrical Engineers, Bangalore, India
SEM: Society of Electron Microscopy (Japan), **Chiba City**
SESA: Society for Experimental Stress Analysis, Westport, Conn.
SFM: Societe Francaise des Mecaniciens, Paris
SFP: Societe Francaise de Physique, Paris
SI: Shirley Institute, Manchester, England
SIAM: Society for Industrial and Applied Mathematics, Philadelphia
SICF: Societe des Ingenieurs Civils de France, Paris
Siemens Siemens & Halske Aktiengesellschaft, Berlin-Siemensstadt
SIF: Societa italiana d i fisica, Bologna
SIT: Society of Instrument Technology, London
SITA: Society for Instrument Technology, Australia, Melbourne
SITJapan: Society of Instrument Technology, Japan, Tokyo
SLA: Special Libraries Association, New York
SMF: Sveriges Mekanförbund, Stockholm
SMPTE: Society of Mation Picture and Television Engineers, New York
Smithsonian: Smithsonian Institution, Washington
SNT: Society for Nondestructive Testing, Evanston, Ill.
Soprodoc: Societe de Productions Documentaires, Paris
SOTELEC: Societe mixte pour le Developpement de la Technique des Telecommunications sur Cables, Paris
Speller: Robert Speller and Sons, Inc., New York
Sperry: Sperry-Rand Corp., New York
SPIE: Society of Photographic Instrumentation Engineers, New York
SPlE: Society of Plastics Engineers, Greenwich, Conn.
Springer: J. Springer Verlag, Berlin, and Lange-Springer Wissenschaftliche Buchhandlung, Berlin
SPSE: Society of Photographic Scientists and Engineers, Washington
SRI: Southeastern Research Institute, Atlanta
SSA: Seismological Society of America, Berkeley
SSC: Sociète Suisse de Chronometrie, Lausanne
SSJ: Seismological Society of Japan, Tokyo
SSSR: Soyuz Sotsialisticheskikh Sovetskikh Respublik(=USSR)
Stanford: Stanford University Press, Stanford, Calif.
STAR: Scientific and Technical Aerospace Reports (NASA), Washington
Steinkopff: Steinkkopff Verlag, Dresden and Frankfurt and Dr. Dietrich Steinkopff, Darmstadt
SVMT: Schweizer Verband für die Materialprüfung der Technik, Solothurn

Taylor: Taylor Instrument Cos., Rochester, N.Y.
Taylor-F: Taylor and Francis, Ltd., London

TCU: Texas Christian University Press, Fort Worth
Technology Press: same as MIT Press
TELE: Kungliga Telestryrelsen, Stockholm
Temple: Temple Press Ltd., London
Teubner: B. G. Teubner Verlag, Stuttgart
Thieme: Georg Thieme Verlag, Stuttgart
Thomas: Chas. C. Thomas, Publishers, Springfield, Ill.
Thomas Register: Thomas Publishing Co., Chicago
TI: Technical Information Co., Ltd., London
TNO: Toegepast Natuurwetenschappelijk, Onderzoek. The Hague (see also NIDR).
Toronto: University of Toronto Press, Toronto
TP: Technical Press, Ltd., London
TRI: Textile Research Institute, Princeton, N.J.
Tudor: Tudor Publishing Co., New York (sales for Chemical Publishing Co.)

UCLA: University of California at Los Angeles
UDC: Universal Decimal Classification
UKAEA: United Kingdom Atomic Energy Authority, Risley
UKW: Ultrakurzwellen = microwaves
UL: Underwriters' Laboratories, Chicago
UN: United Nations, Geneva and New York
UNESCO: United Nations Educational, Scientific and Cultural Organization, Paris
Ungar: Frederik Ungar Publishing Co., New York
United: United Trade Press, Ltd. and United Science Press, Ltd., London
United Catalog: United Catalog Publishers, Inc., Hempstead, N. Y.
Unwin: Geo. Allen & Unwin, Ltd., London
USDA: U. S. Department of Agriculture, Washington
USGS: U. S. Geological Survey, Washington
USNI: U. S. Naval Institute, Annapolis
USPO: United States Patent Office, Washington
USSR: Union of Socialistic Soviet Republics. (= SSSR)

Van Nostrand: D. Van Nostrand Co., Princeton, N. J.
VDC: Verein deutscher Chemiker, Berlin
VDE: Verein deutscher Elektrotechniker, Berlin
VDI: Verein deutscher Ingenieure, VDI Verlag, Berlin
VDMA: Verein deutscher Maschinenbau-Anstalten, Frankfurt a/M
VDPG: Verband deutscher physikalischen Gesellschaften, Braunschweig
VEB: VEB Fachbuchverlag, Leipzig
Verlag Chemie: Verlag Chemie, Weinheim

Verlag Technik: VEB Verlag Technik, East Berlin
Vieweg: Friedr. Vieweg und Sohn, Braunschweig
VINITI: Vsesoyuznyi institut nauchnoi i tekhnicheskoi informatsii, Moscow
VNIIM: Vsesoyuznyi nauchno-issledevatel'skogo instituta metrologii, Leningrad

WADC Wright Air Development Center;
WADD: Wright Air Development Division, Dayton
WBAN: Weather Bureau-Air Force-Navy (in joint publications)
Wiley: John Wiley and Sons, Inc., New York
Williams: Williams & Wilkins, Baltimore (Waverly Press)
Wilson: H. W. Wilson Co., New York
Winter: C. F. Winter Verlag, Füssen
Wisconsin: University of Wisconsin, Madison

Year Book: Year Book Medical Publishers, Chicago

Zanichelli: Nicola Zanichelli Editore, Bologna
Zeiss: VEB Carl Zeiss, Jena (DDR)

II. BIBLIOGRAPHY

2.1 ABSTRACTING AND INDEXING SERVICES

Many abstract journals use a subject-classified arrangement of entries to facilitate scanning and searching, but references pertinent to instrumentation may be expected to appear anywhere.

2.1: A100 General Science: Life Sciences

1. Science Abstracts of China. ISTI. Bimonthly, 1958-59; 1963--. Over 3000 abstracts per year, in English, from Communist Chinese literature. Sections: Life Sciences; Chemistry; Earth Sciences; Mathematical and Physical Sciences, Technical Sciences

2. Index Medicus. NLM. Monthly, 1960--. Original title changed to Current List of Medical Literature (1941-59) resumed 1960; annual cumulation, issued by AMA, replaces Quarterly Cumulative Index Medicus. About 145,000 entries per year.

3. Japan Science Review. Tokyo. Mechanical and Electrical Engineering. Bimonthly, 1955--. Biological Sciences Annual 1951--. Medical Sciences, Quarterly, 1954--.

4. Bulletin signaletique. CNRS. Monthly, 1940--. (Title was Bulletin analytique, 1940-55). From 1961, in 22 separate subject sections, several rich in instrumentation. In subject scope and number of abstracts about 225,000 per year, second only to Referativnyi Zhurnal (USSR).

5. Technical Abstract Bulletin: TAB. DDC. Semimonthly, 1951--; about 28,000 abstracts of technical reports per year. (Successor to Technical Information Pilot, TIP, 1948-51). See next entry.

6. U. S. Government Research Reports. OTS. Semimonthly, 1946--; about 40,000 entries per year. Merged with unclassified TAB,1961.

7. Zentralblatt für Mathematik und ihre Grenzgebiete. Springer. Irregular, 1913--. About 800 abstracts per year. (Mechanik section was separate, 1933-44) as Zentralblatt für Mechanik).

8. Referativnyi Zhurnal. VINITI for Nauk. Quarterly to semimonthly; more than 50 subject sections (1963), up from 5 in 1953; over 600,000 abstracts per year. Sections for Automation; Electronics; Optical Instruments; Metrology; Instrumentation; Aerospace Sciences; Mechanics, etc. Medicine is covered independently by the Academy of Medical Sciences.

2.1 A100 (Cont.)

9. Science Abstracts. Monthly, 1898--. IEE. Sections: A. Physics Abstracts, about 15,000 abstracts per year. B. Electrical Engineering Abstracts, about 7000 abstracts per year.

10. Mathematical Reviews. AMaS. 11 issues yearly, 1940--; about 12,000 abstracts per year.

11. Abstracts of Selected Articles from Soviet Bloc and Mainland China Technical Journals. OTS. Monthly, 1961--, in 6 series: I. Physics. II. Chemistry. III. Metallurgy. IV. Engineering. V. Communications. VI. General Science and Life Sciences. About 18,000 abstracts per year.

12. Current Technical Papers. Bell Labs. Semimonthly, 1962--. Supersedes Index to Current Technical Literature. A. Journals (1923-61). About 25,000 entries per year.

13. Biological Abstracts. Semimonthly, 1927--. Over 100,000 abstracts per year. Biological Abstracts Subject in Context (BASIC) index in each issue; subject index cumulated quarterly. Instrumentation mainly in microscopy, cerebral devices and microbiological apparatus.

2.1: A200 Instrumentation. These abstract journals are the most concentrated sources of past and current instruments information.

1. Dechema Literatur-Schnelldienst. Dechema. Monthly, 1953--. Apparatus and equipment.

2. Gas Chromatography Abstracting Service. Preston. Weekly, on cards, 1959--; around 1500 abstracts per year.

3. Automation Express. IPI; 10 issues per year, 1958--. Abstracts and translations from Soviet literature.

4. Instrumentation Abstracts. Preston. Weekly, 1960--. About 2000 abstracts per year on cards; patents included.

5. Strain Gage Readings. Phoenix, Arizona. Bimonthly, 1958--; about 700 abstracts per year.

6. Applied Mechanics Reviews: Critical Review of the World Literature in Applied Mechanics. ASME. Monthly, 1948--. About 7000 abstracts per year.

7. Gas Chromatography Abstracts. Butterworth. Annual, 1958--.

8. Advances in Biological and Medical Physics. Academic Press. Annual or biennial, 1948--.

8a. Laser Abstracts. Plenum Press, Annual, 1964--.

2.1: A200 (Cont.)

9. Instrument Abstracts. BSIRA. Monthly, 1946-- (formerly Bulletin of the BSIRA).

2.1: A300 Electricity and Electronics

1. Semiconductor Abstracts. BMI. Annual, 1955--; about 2500 abstracts per year.

2. Data Processing Digest. Monthly, 1955--; about 300 abstracts per year.

3. Bibliografia Elettrotecnica: Rassegna mensile della stampa tecnica italiana e straniera. ANIDEL. Combines former separate issues for Italian and other literature. Monthly, 1947--. Around 15,000 entries per year.

4. Computer Abstracts and Bibliography. TI. About 3000 entries per year.

5. Abstracts and References. IRE. Monthly, 1946--. Section in IRE Proceedings, supplied by Electronic Technology (London). About 4000 abstracts per year. Discontinued after January 1963.

6. Technical News Bulletin. AEI Ltd. Weekly, 1926--. About 3000 abstracts (electricity, electronics) per year.

7. Computing Reviews. ACM. Bimonthly, 1961--. About 1500 abstracts per year.

8. Digest of Literature on Dielectrics. NAS-NRC. Annual, 1936--.

9. Bibliography and Abstracts on Electrical Contacts. ASTM. Annual, 1943--; around 300 abstracts per year.

10. Elektronentechnische Berichte: Forschungsberichte und Referatenkartei für das Gebiet der Hochfrequenztechnik, ihre Grenzgebiete und Anwendungen. IWB. RATEM. Irregular, 1947--. Reviews about 1500 periodicals.

11. Reliability Abstracts and Technical Reviews. RTI and NASA. Annual, 1961--.

12. Computer Abstracts on Cards. Cambridge (Mass.) Communications Corp. About 5000 abstracts per year.

13. Abstracts of Computer Literature. Burroughs Corp., Pasadena. Bimonthly, 1957--; about 1500 abstracts per year.

14. Electronics and Communications Abstracts. Brentwood, England. Bimonthly, 1961--; around 5000 abstracts per year.

2.1: A300 (Cont.)

15. Bulletin signaletique des telecommunications, CNET. Monthly supplement to Annales des telecommunications, 1946--. About 12,000 abstracts per year.

2.1: A400 Physics

1. Solid State Abstracts. Cambridge, Mass. Monthly, 1960--(formerly Semiconductor Electronics). Card service. About 5000 abstracts per year, including patents.

2. Reports on Progress in Physics. IP and PS. Nearly annual, 1945--. Cumulative index (v.1-15) in v.15, 1952.

3. Nuclear Science Abstracts. AEC. Semimonthly, 1947--. About 33,000 abstracts per year.

4. Meteorological and Geoastrophysical Abstracts. AMS. Monthly, 1950-59 as Meteorological Abstracts; renamed 1960. About 11,000 abstracts per year; card issues and monthly UDC and permuted title indexes.

5. Geophysical Abstracts. USGS. Quarterly, 1929--. About 1600 abstracts per year.

6. Geoscience Abstracts. AGI. Monthly, 1959--. About 4500 abstracts per year.

7. Physikalische Berichte. VDPG. Monthly, 1920--. Merger of Beiblätter zu den Annalen der Physik. (1877-1919) and the annual Fortschritte der Physik (1847-1919). Over 15,000 abstracts per year.

8. Zentralblatt für Kernforschung und Kerntechnik. Akademie. Monthly, 1961--; about 10,000 abstracts per year. (Was Kerntechnik section of Technisches Zentralblatt,1958-60).

9. Rheology Abstracts: A Survey of World Literature. BSR. Quarterly, 1958--(formerly carried in Bulletin of the BSR). About 700 abstracts per year.

2.1: A500 Chemistry

1. Spectrochemical Abstracts. Hilger. Irregular, 1933--. In 6 vols. 1933-55, about 2300 abstracts. Not identical with the Abstracts of Recent Papers Section, 1956--, in Hilger Journal.

2. Chemical Abstracts. ACS. Biweekly, 1907--. Indexes: Annual, 1907--; decennial, 1907-56; quinquennial, 1957--. About 8000

2.1: A500 (Cont.)

abstracts in 1907, over 166,000 in 1962. New subject division (1961) in 73 sections, 59 available in 4 parts for separate subscription: Physical, Inorganic, Analytical (1-14); Organic (26-38); Macromolecular (37,38 and 41-50); Biochemical (54-73). Features added in 1963: Patent Concordance, with the numerical patent index in each issue (corresponding patents in other nations). Keyword Index, a permuted subject index, in each issue.

3. Analytical Abstracts. SAC. Monthly, 1954--. About 5000 abstracts per year.

4. Chemisches Zentralblatt, Akademie. Weekly, 1830--. Cumulative indexes (mostly quinquennial), 1870-81 and 1897--. Suspended 1945-46, and divided (West and East Germany), 1946-50. Several subject sections rich in instrumentation.

2.1: A600 Engineering

1. Bulletin of the BMRA. Irregular, 1948--. About 500 abstracts per year.

2. Corrosion Abstracts. Bimonthly, 1962--. Published as a section in Corrosion, 1945-61. NACE. About 2000 abstracts per year. Independent Swedish abstracts, same title, using NACE filing system; IVA: 10 issues, about 2000 abstracts per year.

3. Technisches Zentralblatt. Akademie. Monthly. Sections:
Elektrotechnik, 1951--, about 10,000;
Maschinenwesen, 1952--, about 10,000;
Energiewesen, 1957--, about 6000 abstracts per year.
Kerntechnik (1958-60) separated in 1961 as Zentralblatt für Kernforschung und Kerntechnik.

4. International Aerospace Abstracts. AIAA. Semimonthly, 1961--; annual index is Aerospace Engineering Index. Predecessor was Aeronautical Engineering Review(1940-60) and its annual index Aeronautical Engineering Index. Over 10,000 abstracts per year. Synchronized, 1963, with STAR (NASA) in alternating issue dates and divided coverage: AIAA covers world literature NASA covers only technical reports (its own and others).

5. Zentralblatt für Werkstofforschung. Springer. Irregular, 1941--.

6. Engineers Digest: Design, Production, Research, Development, London, Monthly, 1940--. (Abstracts, digests, new products and processes). Includes patents.

2.1: A600 (Cont.)

7. Checklist of Periodical Titles. PAL. Semiweekly, 1941--; about 12,000 entries per year. Uniterm Index to Periodicals. Weekly, 1944--; quarterly and annual cumulations; card service; about 12,000 entries per year.

8. Bulletin signaletique: Service de documentation et d'information technique de l'aeronautique. Cité de l'Air, Paris. Semimonthly, 1945--. Classified abstracts, on cards; about 9500 per year.

9. Abreges techniques. Dunod. 11 issues per year, 1962--.

10. Environmental Effects on Materials and Equipment. PDC. Semimonthly, 1961--, in two sections: A. Chemical and Biological (continues PDC Abstracts, 1946-61). B. Physical and Engineering. About 2500 abstracts per year from literature and patents.

11. Battelle Technical Review. BMI. Monthly, 1929--(formerly Battelle Library Review). Original papers and about 15,000 abstracts per year.

12. Astronautics Information Abstracts: Reports and Open Literature. JPL. Monthly, 1962--. Merger 1962 of two sections: Abstracts Information: Reports (1959-62) and Abstracts Information: Open Literature (1959-62).

13. Engineering Index. ESL. Annual, 1885-1961; monthly, 1962--. Cards in subject classes, 1928--. About 34,000 abstracts per year. Some classes rich in instrumentation.

14. ZAA: Zentralblatt der Aero- und Astronautik. Quarterly, 1961--; about 1000 abstracts per year from German literature.

15. Nuclear Engineering Abstracts. London, Quarterly, 1960--.

16. STAR: Scientific and Technical Aerospace Reports. NASA. Semimonthly, 1958--. Subject, name and number indexes in each issue, cumulated quarterly, semiannually and annually. Limited to technical reports; AIAA covers world publications in International Aerospace Abstracts, alternating with STAR in semimonthly dates of issue. Microcopy service standardized with that of AEC, 1963.

17. Index aeronauticus. Monthly, 1945--. London. About 3500 abstracts per year.

2.1: A700 Process Industries. These specialized abstract journals are often the best first source for finding information or literature on the instrument auxiliaries needed in all industrial processes.

2.1: A700 (Cont.)

1. Textile Technology Digest. ITT. Monthly, 1944--. About 6000 abstracts per year.

2. Highway Research Abstracts. NRC. Monthly except August, 1931--. About 500 abstracts per year.

3. Metallurgical Abstracts. IM. Monthly, 1931--(in Journal of the IM). About 6000 abstracts per year.

4. Crerar Metals Abstracts. JCL. Monthly, 1952--; about 2500 abstracts per year.

5. Gas Abstracts. IGT. Monthly, 1945--; also card service. About 3500 abstracts per year.

6. Ansco Abstracts. GAFC. Monthly, 1941--; card service; about 3500 abstracts per year.

7. Jernkontorets Litteraturöversikt. Stockholm. Monthly, 1949--. About 2000 abstracts per year by subjects (including instrumentation).

8. British Ceramic Abstracts. BCeS. Monthly, 1902--(in Transactions of the BCeS). About 3000 abstracts per year.

9. Photographic Abstracts. RPS. 8 issues per year, 1921--; over 2000 abstracts per year.

10. Abstracts and Current Titles. Monthly, 1947--(title was Fuel Abstracts till 1960). About 8500 abstracts per year.

11. Verfahrenstechnische **Berichte.** Chemical and Process Engineering Abstracts. Verlag Chemie. Weekly, 1932--. Over 5000 abstracts per year; instrumentation included.

12. Abstracts of Photographic Science and Engineering Literature. **Columbia for SPSE.** Monthly, 1962--. About 4500 abstracts per year..

13. Ceramic Abstracts. ACeS. Monthly, 1922-(in Journal of the ACeS). About 4000 abstracts per year.

14. Summary of Current Literature. SI. Semimonthly, 1921--; about 5000 abstracts per year. (Textile technology and testing).

15. Bulletin de documentation ceramique. ICF. Quarterly, 1940--. About 1000 abstracts per year.

16. Air University Library Index to Military Periodicals. Air University, Maxwell AFB. Monthly, 1949--. Annual and triennial cumulations. (Title, 1949-1962, was Air University Periodical Index).

2.2 BIBLIOGRAPHIES

The distinction between serially published bibliographies and the indexing services entered in 2.1 is not always sharp. Both 2.1 and 2.2 should be consulted when there is doubt.

Caution: Do not rely on prior bibliographies sight unseen. The time they can save is valuable, but the price may be too high if the bibliographer has neglected to define with all possible clarity his subject scope, time coverage and sources consulted. Let bibliographers heed this caution and unfailingly preface their work with proper definitions.

2.2: B100 Instrumentation

1. R. Navrodineanu, Bibliography on Analytical Flame Spectroscopy. CLS, 1962; 766 entries.

2. Bibliography on Medical Electronics. IRE. (IEEE). Annual, 1958--; about 2000 entries per year.

3. Paul D. Freeze, Bibliography on the Measurement of Gas Temperature. NBS Circular 513. 1952; 14 pp.

4. Rasseyanie sveta i infrakrasnaya spektroskopiya: Bibliograficheskii ukazatel', 1928-40. Moscow, 1961; 452 pp. (Light and infrared radiation).

5. Bibliography of Seismology. DO. Semiannual, 1929--; about 1000 entries per year.

6. Soviet Seismology and Seismometry: A Preliminary Bibliography, 1958-60. LC. 1961--; nearly 1000 entries.

7. Titulos Spectroscopic: Un periodico del titulos de omne articulos super themas spectroscopic publicate ubicunque in le mundo. CLS. Semimonthly, 1962--. (Text in Interlingua).

8. International Bibliography of Electron Microscopy. NYSEM. Irregular, 1950--; card service.

9. Bibliografia polarografica. Padua. Annual, 1949--. About 800 entries per year.

10. ITC International Bibliography for Photogrammetry. ITC. Irregular(on cards), 1958--; around 1000 abstracts per year.

11. Bibliography on Thermostatic Bimetals, Low-expansion Alloys, and Their Application. ASME. 1950; 52 pp.

2.2: B100 (Cont.)

12. USSR Missiles Rockets and Space Effort: Bibliographic Record, 1956-60. U. S. Army and GPO, 1960; 49 pp. (References mainly from American sources).

13. C. Halpern and R. J. Moffat, Bibliography of Temperature Measurement, 1953-60. NBS Monograph 27, 1961; 13 pp.

14. Index to the Literature of Spectrochemical Analysis. ASTM. Irregular (about 5 year intervals), 1941--; literature coverage from 1920.

15. Bibliography of Polarographic Literature. Leeds-Northrup, 1950; 2208 references.

16. H. Yakowitz and J. R. Cuthill, Annotated Bibliography on Soft X-Ray Spectroscopy. NBS Monograph 52, 1962; literature of 1950-60; 108 pp.

17. C. A. Mabey, Bibliography on Telemetering. AIEE. (IEEE) Pub. No. S-68, 1954; 46 pp.

18. W. G. Brombacher and T. W. Lashof. Bibliography and Index on Dynamic Pressure Measurements. NBS Circular 558, 1955; 124 pp. 850 references.

19. Tibor W. Marton and Ralph Klein, Soviet Research in Field Electron and Ion Emission, 1955-59. Annotated Bibliography. NBS Tech. Note No. 75, 1960. TN 234, 1964, for 1960-63.

20. Joseph Pearlstein, Measurement of Displacement, Velocity and Acceleration: Bibliography with Abstracts and Index. DOFL. Rept. TR-836, 1960; 188 pp.

21. Vernon E. Coslett, editor, Bibliography of Electron Microscopy. Longmans, 1951; 350 pp.

22. Air Force Scientific Research Bibliography, 1950-56. AFOSR and OAR. v.I, AFOSR 700, 1961; 1150 pp.

23. Japanese Periodicals Index: Natural Sciences, Tokyo. Monthly, 1960--.(English language edition).

24. Australian Science Index: Articles Published in Australian Scientific and Technical Periodicals. CSIRO. Monthly, 1957--. About 4000 entries per year. Supplement in preparation, 1963.

2.2: B200 Automation and Control

1. Current Bibliography on Analog and Digital Computers and Their Applications. LCC. Quarterly, 1954--; about 24,000 entries

2.2:B200 (Cont.)

per year; text in English and German.

2. International Bibliography of Automatic Control. IFAC. Quarterly, 1962--.

3. **Schrifttumsberichte** aus der Regelungstechnik. VDI, 1941-45 (in 1 issue of VDI Zeitschrift annually). Resumed, 1955--, as Regelung.

4. Warren F. Wade and Emory N. Kemler, Automatic Control Bibliography. Summary Reports, Spring Park, Minn., 1955; 331 pp.

5. Emile and K. Delavenay, Bibliography of Mechanical Translation. Mouton. 1960; 69 pp.

6. Implications of Automation and Other Technological Developments: A Selected Annotated Bibliography. BLS Bull. 1319, 1962; 136 pp.

7. Bibliography on Feedback Control. Applications in Industry. AIEE (IEEE), 1954; 2083 references.

8. N. I. Damaskine, Avtomatizatsiya v mashinostroenii: Bibliograficheskii spravochnik otechestvennoi i inostrannoi literatury za 1950-1959. Moscow, 1961; 522 pp (Automation and machine design; world literature.)

9. A. F. Armstrong and G. I. Maughan, Some Recent Developments in Automatic Control: Information Bibliography. UKAEA, 1957; 178 entries.

10. Bibliography on the Use of IBM Machines in Science, Statistics and Education. Columbia and IBM, 1952; revised 1954 (60 pp), 1956 (81 pp.).

11. Annotirovannyi ukazatel' literatury avtomatika, telemekhanika, pribostroenie. Nauk. Annual, 1958--. (Automation and remote control).

2.2: B300 Telecommunications. Interpreting telecommunications broadly, this section includes audio and video transmission, radar, and other ways of propagating signals. Overlap with electricity and electronics necessitated many arbitrary placement decisions; the subject index will help.

1. C. Marton et al., Bibliography of Electron Microscopy. NBS Circular 502, 1950; 87 pp.(to 1950).

2. Selected Foreign References on Scatter Propagation of Ultrashort Waves, 1956-60, LC. 1961.

2.2:B300 (Cont.)

3. Radar and Radio Navigation: Annotated Bibliography, 1950-59. LC. 1960 (AID Rept. 60-55).

4. Wayne B. Nottingham, editor, Bibliography on Physical Electronics. Additon, 1954; 428 pp.

5. C. K. Moore and K. I. Spencer, Bibliography of Electronics. Macdonald, 1961; 411 pp.

6. **Radioastronomiya Annotirovannyi bibliograficheskii ukazatel' otechestvennoi i inostrannoi literatury, 1932-58.** Nauk, 1960; 216 pp.

7. Tokoyushi Kono: Bibliography on Transistors. Tokyo, 1959; 288 pp. (Japanese text).

8. Annotirovannyi ukazatel' literatury po radioelektronika. Moscow. Semimonthly, 1945--.

9. Radiowave Propagation. LC. 1961; 261 entries (Soviet sources).

10. L. A. Manning, Bibliography of the Ionosphere (1925-60). Stanford, 1962, 614 pp.

2.2:B400 General, or Not Otherwise Classified (A)

1. R. M. McClintock and H. P. Gibbons, Mechanical Properties of Structural Materials at Low Temperatures: A Compilation From the Literature. NBS Monograph 13, 1960; 180 pp.

2. Ernest F. Flock and Carl Halpern, Bibliography of Books and Published Reports on Gas Turbines, Jet Propulsion and Rocket Power Plants. NBS Circular 509, 1951; 64 pp. and Supplement (1954).

3. Current Contents: Space, Electronic and Physical Sciences. IScI. Weekly, 1962--.

4. T. M. Flynn. Bibliography of the Physical Equilibria and Related Properties of Some Cryogenic Systems. NBS-TN 56, 1960; 123 pp.

5. Index to the Literature of Magnetism. Bell Labs., Semiannual, 1962--.

6. J. N. Brennan, Bibliography on Shock and Shock-Excited Vibrations. Res. Eng. Bull. No. 68, Penn. State Univ., 1957: v.1, 348 pp.; 1958, v.2, 181 pp.

2.2:B400(A) (Cont.)

7. Lawrence A. Manning, Bibliography of the Ionosphere: Annotated Survey through 1960. Stanford, 1962; 613 pp.

8. Classified Bibliography of X-Ray and Electron Diffraction Papers. Bell Labs. Semiannual.

9. Quarterly Check Lists. ABS. Geophysics, 1960--; about 300 entries per year. Mathematica, 1961--; about 450 entries per year. Physics, 1960--; about 600 entries per year.

10. Bibliography on Plasma Physics and Magnetohydrodynamics. Maryland, 1959.

11. A. Henley and C. L. Schnettler, Electrophoresis Bibliography, AI. Ed. 2, 1955; 290 pp.

12. S. B. Sells and E. S. Barratt, editors. Bioelectronics Abstracts. TCU, 1961; 207 pp.

2.2:B400 General, or Not Otherwise Classified. (B.)

1. British Technology Index. LA. Monthly, 1962--. Includes control, computers and instrumentation.

2. C. K. Moore and K. J. Spenser, Electronics: Bibliographical Guide, MacDonald, 1961; 411 pp.

3. Theodore Besterman, World Bibliography of Bibliographies and of Bibliographical Catalogs, Calendars, Abstracts, Digests, Indexes and the Like. Geneva. Ed. 3, 1956; 5701 columns in 4 v.

2.2B400 General, or Not Otherwise Classified (C).

1. W. Niedergall, Kältetechnik und Thermodynamik. Literaturverzeichnis über Kältetechnik und Kälteanwendung, Klimatechnik, Wärmetheorie, Wärmeübertragung und Wärmewirtschaft. Springer, 1961; 68 pp.

2. AED Information Service: Indexed Bibliography. Conference Papers, Dissertations, Patents, Reports. AED. English language edition; irregular, 1957--. About 6000 entries per year (nuclear energy).

3. Universalbibliographie Technik und Wirtschaft. DT. Annual, 1959--. About 48,000 entries per year.

2.2:B400(C) (Cont.)

4. Zeitschriftenschau. VDI. Semimonthly, 1916--; section in VDI Zeitschrift. (Formerly Technische Zeitschriftenschau). About 7500 entries per year.

5. A. H. Sokoll, Bibliographie zur Aero- und Astronautik: Deutschsprachige Shrifttum 1945-1960. Springer, 1962; 206 pp.

6. Repertorium technicum. NIDR. Irregular, 1931--. Bibliography (books and articles).

7. Bibliographie der Veröffentlichungen über Hydro- und Aerodynamik der Modellen-versuchsanstalt (nun MPI), 1907-59. MPI Mitteilung 25, 1960; 136 pp.

2.2:B400 General, or not Otherwise Classified. (D.)

1. Report on Scientific Work in Meteorology and Physics of the Atmosphere, 1957-59. Nauk and OTS. JPRS Translation No. 7455; nearly 2000 references.

2. Kosmicheskie luchi: Bibliograficheskii ukazatel' 1956-60. Nauk, 1961; 183 pp. (cosmic rays).

3. Indice bibliografico. CIIPN. Monthly, 1952--. Title was Boletin del Centro de Documentacion Cientifica y Tecnica de Mexico, 1952-61. Separate sections for: 1. Physical sciences. 2. Engineering. 3. Chemistry. 4. Medicine. 5. Life sciences. About 100,000 entries per year.

4. A. M. Lukomskaya, Bibliograficheskie istochniki po matematike i mekhanike, izdanye v SSSR v 1917-52. Nauk, 1957; 354 pp. Supplement, 1953-60. 1963; 272 pp.

2.3 BOOKS, MONOGRAPHS, REFERENCE WORKS

This guide generally excludes separates (library talk for single publications, too small to be books, too miscellaneous to classify). Exceptions are separates which grew up to book size, at least in utility, and are too significant to be ignored. Separates include dissertations, bulletins, technical reports and a variety of single publications issued by government agencies, scientific societies, etc., through whose publication lists they can be traced.

2.3: 1000 Reference Works, Handbooks, Data Compilations. (A.)

1. Robt. H. Perry, Cecil H. Chilton and Sidney D. Kirkpatrick, eds., Chemical Engineers Handbook. McGraw-Hill. Ed. 4, 1963.

2. H. L. Horton, editor. Machinery's Handbook. Industrial. Ed. 16, 1959; 2104 pp.

3. Edw. U. Condon & Hugh Odishaw, Handbook of Physics. McGraw-Hill, 1958; 1504 pp.

4. Archer E. Knowlton, editor, Standard Handbook for Electrical Engineers. McGraw-Hill. Ed. 9, 1957; 2230 pp.

5. W. E. Forsythe, editor, Smithsonian Physical Tables. Smithsonian Meteorological Tables.. 1951; 527 pp.

6. Dwight E. Gray, editor, AIP Handbook. AIP, 1957; 8 sections.

7. Chas. L. Mantell, editor. Engineering Materials Handbook. McGraw-Hill, 1958; 1906 pp.

8. Darle W. Dudley, editor. Gear Handbook: Design, Manufacture and Application of Gears. McGraw-Hill, 1962; 24 sections.

9. Ovid W. Eshbach, editor, Handbook of Engineering Fundamentals. Wiley, Ed. 2, 1952; 1322 pp.

10. Jos. M. Juran, editor, Quality Control Handbook. McGraw-Hill. Ed. 2, 1962; 1220 pp.

11. ASME Handbook. McGraw-Hill. Ed. 1. I. O.J.Horger, Metals Engineering: Design, 1953; 405 pp. II. S.L.Hoyt, Metals: Properties, 1954; 445 pp. III. Jesse Huckert, Engineering Tables, 1956; 692 pp. IV. R.W.Bolz, Metals Engineering: Processes, 1958; 448 pp.

12. T. Croft and C. C. Carr, American Electricians Handbook. McGraw-Hill. Ed. 8, 1961; 1773 pp.

13. Harry D. Husky and G. A. Korn, Computer Handbook. McGraw-Hill, 1961; 1288 pp.

14. Handbook of Geophysics. AF and Macmillan, 1960; 22 sections.

15. Robt. W. Landee, D. C. Davis and A. P. Albrecht, Electronic Designers' Handbook. McGraw-Hill, 1957; 23 sections.

16. Miklos I. Hetenyi, Handbook of Experimental Stress Analysis. Wiley, 1950; 1077 pp.

17. Lloyd P. Hunter, editor, Handbook of Semiconductor Electronics. McGraw-Hill. Ed. 2, 1962; 900 pp.

18. Henry Jasik, editor, Antenna Engineering Handbook. McGraw-Hill, 1961; 1013 pp.

2.3:1000(A) (Cont.)

19. Clifford Strock, editor, Handbook of Air Conditioning, Heating and Ventilating. Industrial, 1959; 1112 pp.

20. Frank W. Wilson and P. D. Harvey, Tool Engineers Handbook. McGraw-Hill. Ed. 2, 1959; 103 sections.

21. Norbert A. Lange, editor, Handbook of Chemistry. McGraw-Hill. Ed. 10, 1961; 1969 pp.

22. Robt. I. Sarbacher, Encyclopedic Dictionary of Electronics and Nuclear Engineering. Prentice-Hall, 1959; 1417 pp.

23. Metals Handbook. ASM. Ed. 7, 1948. Carried to 1960 by supplements. Ed. 8, 1961--, v. I. Properties and Selection of Metals, 1300 pp. v. II. Heat Treating, Cleaning and Finishing, 1964; 700 pp.

24. Harold Pender, editor, Electrical Engineers' Handbook. Wiley. Ed. 4, 1949-50. I. Electric Power, 1716 pp. II. Communication: Electronics, 1618 pp.

25. Reactor Handbook. AEC and Wiley. Ed. 2, 1960-62; 4 v. I. Materials, 1207 pp; II. Fuel Processing, 665 pp; IIIA, Physics, 287 pp; IIIB, Shielding, 313 pp.

26. J. K. Salisbury & C. Carmichael, editors. Kent's Mechanical Engineers' Handbook. Wiley. Ed. 12, 1950. I. Power, 1409 pp. II. Design and Production, 1611 pp.

27. Chas. D. Hodgman, editor, Handbook of Chemistry and Physics. Chemical. Ed. 44, 1963; 3640 pp.

28. Theodore Baumeister, editor, Marks' Mechanical Engineers Handbook. McGraw-Hill. Ed. 6, 1958; 2320 pp.

29. Wilhelm Flügge, editor, Handbook of Engineering Mechanics. McGraw-Hill. Ed. 1, 1962; 88 sections.

2.3:1000 Reference Works (B)

1. Richard Glazebrook, Dictionary of Applied Physics. Macmillan, 1922-23; 172 monographs in 5 vols.

2. Alex. Goldsmith, Thos. E. Waterman & H. J. Hirschhorn, editors, Handbook of Thermophysical Properties of Solid Materials. In 5 v.: I. Elements. II. Alloys. III. Ceramics. IV. Cermets, Intermetallics, Polymerics and Composites. V. Appendix and Indexes. Macmillan, 1961.

3. Fritz Langford-Smith, Radiotron Designs Handbook. RCS. Ed. 4, 1953; 1498 pp.

2.3:1000 Reference Works. (C)

1. G. Bleisteiner and W. von Mangoldt, editors, Handbuch der Regelungstechnik. Springer, 1961; 1516 pp; 1244 references.

2. Mogens A. Blom, editor, El-Haandbogen: Anlaeg af installationer, Maskiner og motorer; reparationsteknik. Copenhagen. Ed. 2, 1951; 794 pp. (Electrical devices).

3. H. Ebert, editor. Physikalisches Taschenbuch. Vieweg. Ed. 3, 1962; 611 pp.

4. Handbuch der Physik. Springer. New ed., 1955--; 54 v. Monographs in German, English or French; indexes in German and English. Groups: I. Mathematische Methoden (v.1-2). II. Prinzipien der theoretischen Physik. (v.3-5). III. Mechanisches und thermisches Verhalten der Materie (v.6-15). IV. Elektrisches und magnetisches Verhalten der Materie (v.16-23). V. Optik (v. 24-29). VI. Roentgenstrahlen und Korpuskularstrahlen (v.30-34). VII. Atom- und Molekularphysik (v.35-37). VIII. Kernphysik (v.38-45; v. 45 is Nuclear Instrumentation). IX. Kosmische Strahlung (v.46). X. Geophysik (v.47-49). XI. Astrophysik (v.50-54).

5. Josef Kroenert, editor, Handbuch der technischen Betriebskontrolle. Akademische. v.2. Mengenmessungen in Betrieb,1955; 662 pp. v.3. Physikalische Messmethoden. Ed. 3, 1959; 627 pp. v.4. Physikalisch-chemische Analyse im Betrieb, 1953; 621 pp.

6. Maurice D. Papin, editor, Electrotechnique, electronique, telecommunications: Notes et formules de l'ingenieur. Paris, 1962; 2146 pp.

7. F. Sass, C. Bouche' and A. Leitner, editors, Dubbek Taschenbuch für den Maschinenbau. Springer, Ed. 12, 1961. Vols. I and II 884 and 970 pp.

8. K. Steinbuch, editor, Taschenbuch der Nachrichtenverarbeitung: Grundlagen und Technik der Rechanautomaten, Datenverarbeitung und Maschinensteurerung. Springer, 1962; 1521 pp.; 2835 references.

9. Wilhelm C.W.D.Wiens & Fritz F. Harms, editors, Handbuch der Experimental-Physik. Akademische. 1926-1935; v. 1-26 and Supplements I, II bound in 49 vols.

10. Zahlenwerte und Funktionen aus Physik, Chemie, Astronomie, Geophysik und Technik. (Landolt-Börnstein). Ed. 6 in 4 v., 1950--. I. Atom- und Molekularphysik, 5 pts.,1950-55; 3203 pp. II. Eigenschraften der Materie, 10 pts., 1956-(some parts still in preparation, 1963). III. Astronomie und Geophysik, 1962

2.3:1000(C) (Cont.)

795 pp. IV. Technik, 1955--, 3 parts (Part 2 in preparation, 1963).

2.3:1100 Design of Experiments; Technique. Entered for their interest to designers and users of instruments.

1. Ronald A. Fisher, Design of Experiments. Hafner, Ed. 7, 1960; 248 pp.

2. Philip M. Morse and H. Feshbach, Methods of Theoretical Physics. McGraw-Hill, 1953; 1978 pp. in 2 v.

3. Edmund V. Cowdry, Laboratory Technique in Biology and Medicine. Williams. Ed. 3, 1952; 282 pp. Ed. 4 in prepn; 1964.

4. Ronald A. Fisher, Statistical Methods for Research Workers. Hafner. Ed. 13, 1958; 356 pp.

5. Oscar Kempthorne, Design and Analysis of Experiments. Wiley, 1952; 631 pp.

6. Wm. G. Cochran and G. M. Cox, Experimental Designs. Wiley, Ed. 2, 1957; 611 pp.

7. B. Adkins, K. F. Raby, A. W. Blackhurst, E. A. Binney & A. L. Whiteley, Rotating Amplifiers: Amplidyne, Matadyne, Magnicon, and Magnavolt and Their Use in Control Systems. George Newnes, Ltd. London, 1954.

8. J. Thewlis, R. C. Glass, D. J. Hughes and A. R. Meetham, editors, Encylopaedic Dictionary of Physics. Pergamon, 1964; 8000 pp.; v. 1-7, A-Z; v. 8, Subject Index; v. 9, about 1000 pp., Multilingual Glossary of Physical Terms (English, French, German, Russian, Japanese, Spanish). Annual subject supplements.

9. W. E. Barr and V. J. Anhorn, Scientific and Industrial Glassblowing and Laboratory Techniques. Instruments. Ed. 2, 1959; 408 pp.

10. H. J. J. Braddick, Physics of Experimental Method. Wiley, 1954; 404 pp.

2.3:1200 Instrumentation: General. (A)

1. Forrest C. Tyson, Jr. Industrial Instrumentation. Prentice-Hall. 1961; 368 pp.

2. Howard P. Kallen, Handbook of Instrumentation and Controls. McGraw-Hill. Ed. 1, 1961; 13 sections.

3. T. G. Beckwith and N. L. Buck, Mechanical Measurements. Addison, 1961; 559 pp.

4. R. J. Sweeney, Measurement Techniques in Mechanical Engineering. Wiley, 1953, 309 pp.

5. Standards and Practices for Instrumentation. ISA, 1963, 300 pp.

6. Jas. E. Randall, Elements of Biophysics. Yearbook. Ed. 2, 1962; 339 pp. Instrumentation; control systems; mechanics; electricity; radioisotopes.

7. Werner G. Holzbock, Instruments for Measurement and Control. Reinhold. Ed. 2, 1962; 391 pp.

8. Grady C. Carroll, Industrial Instrument Servicing Handbook. McGraw-Hill, 1960; 886 pp.

9. Ernest B. Jones, Instrument Technology. Butterworth. v. 1. Pressure, Level, Flow, Temperature. 1953, 315 pp. v.2. Instruments for Analysis. 1956; 208 pp. v. 3. Telemetering and Automatic Control. 1957; 198 pp.

10. Igor Bazovsky, Reliability: Its Theory and Practice. Prentice-Hall. 1961; 320 pp.

11. Proceedings of the National Conference on Instrumentation. R. J. Jeffries, editor. Michigan State College, 1953.

12. Douglas M. Considine, editor, Process Instruments and Controls Handbook. McGraw-Hill, 1957; 13 sections. Instrumentation glossary by Joshua Stern.

13. Manoel F. Behar, Handbook of Measurement and Control. Instruments. Ed. 1, 1952, 288 pp.; Ed. 2, 1954, 216 pp.

14. Arthur Elliott & J.H.Dickson, Laboratory Instruments: Their Design and Application. Tudor, 1953; 414 pp.

15. Austin E. Fribance, Industrial Instrumentation Fundamentals. McGraw-Hill, 1962; 784 pp.

2.3:1200(A) (Cont.

16. C. S. Draper, Walter McKay & Sidney Lees, Instrument Engineering. McGraw-Hill. In 3 vols. I. Methods for Describing the Situations of Instrument Engineering, 1952, 288 pp. II. Methods for Associating Mathematical Solutions with Common Forms, 1953, 827 pp. III. Applications of the Instrument Engineering Method. Part I. Measurement Systems, 1955; 879 pp.

17. Donald P. Eckman, Industrial Instrumentation. Wiley, 1950; 396 pp.

18. Wesley E. Woodson, Human Engineering Guide for Equipment Designers. California, 1954; 246 pp.

2.3:1200 Instrumentation: General. (B).

1. Arthur W. Judge, Engineering Precision Measurements. Macmillan. Ed. 3, 1957; 447 pp.

2. Guide to Instrument Design. BSIRA and Taylor, 1963; 444 pp.

3. Instrument Manual. United. Ed. 1, 1949; Ed. 2, 1953; Ed. 3,1960, 743 and 100 pp.

4. F. Twyman, Prism and Lens Making. Hilger. Ed. 2, 1952; 629 pp.

5. Edw. W. Battey, editor, Instrument Encyclopedia. TP. Ed. 1, 1958, 292 pp.

2.3:1200 Instrumentation: General. (C).

1. Chas. Dévé, Travail des verres d'optique de precision. Paris. Ed. 3, 1949. Translated by T. L. Tippell as Optical Workshop Principles. Hilger, Ed. 2, 1954; 436 pp.

2. J. Idrac, **Mesure et Instrument de Mesure. Dunod. Ed. 4, 1960;** 125 pp.

3. M. Denis-Papin, J. Vallot and A. Fouille. Aide-Memoire metrologie appliquée: Methodes et instruments de **mesure.** Dunod. Ed. 3, 1959; 300 pp.

4. Acta IMEKO: Proceedings of the Instrument and Measurements Conference. IMEKO I. Budapest, 1958; 5 v. IMEKO II, Budapest, 1961, 5 v. IMEKO III, Stockholm, September 1964.

5. Siegfried John, Fernmesstechnik. I. Allgemeines über Verfahren für kürzere Entfernungen. Karlsruke, 1951, 100 pp.

6. F. I. Havlicek. Einführung in das Korrigieren optischer Systeme. Stuttgart. 1960; **91 pp.**

7. Proceedings of the International Instruments and Measurements Conference. IVA. I, 1947, 252 pp.; II. 1949, 314 pp.; III. 1952, 450 pp.; IV. no data. V. 1960, Academic Press,1961; v.1, Automatic Process Control, Physical Methods of Chemical Analysis, pp.1-506. v.2, Nuclear Instrumentation; Measurement of Electric and Magnetic Quantities; Reactor Control. pp. 507-1227.

2.3:1230 Instrumentation: Devices. (A)

1. Jas. Spencer, Maintenance and Servicing of Electrical Instruments. Instruments. Ed. 3, 1951; 256 pp.

2. Gomer L. Davies, Magnetic Tape Instrumentation. McGraw-Hill, 1961 263 pp.

3. Transducer Compendium. ISA, 1963; 500 pp.

4. Elliott J. Siff and C.L.Emmerich, Engineering Approach to Gyroscopic Instrumentation. Speller, 1960; 120 pp.

5. Peter K. Stein, Measurement Engineering. v.1. Fundamentals (19 chapters). v.2. Applications. Non-selfgenerating Transducers (10 chapters). Peter K. Stein, 1963.

6. T. N. Whitehead, Design and Use of Instruments and Accurate Mechanism. Dover, 1954, 283 pp.

7. David B. Kret, Transducers: A Compilation Useful Primarily in Oscillography. DuMont, Ed. 2, 1953; 151 pp.

8. Mills Dean and R. D. Douglas, editors, Semiconductor and Conventional Strain Gages. Academic Press, 1962; 381 pp.

9. Grady C. Carroll, Industrial Process Measuring Instruments. McGraw-Hill, 1962; 454 pp.

10. Resistance Strain Gages. NBS Symposium, 1954; NBS Circular 528; 140 pp.

11. Chas. C. Perry and H. R. Lissner, Strain Gage Primer. McGraw-Hill. Ed. 2, 1962; 332 pp.

12. Gordon R. Partridge, Principles of Electronic Instruments. Prentice-Hall, 1958; 393 pp.

13. Harold E. Soisson, Electronic Measuring Instruments. McGraw-Hill, 1961; 352 pp.

2.3:1230(A) (Cont.)

14. Arthur Elliott & J.Home Dickson, Laboratory Instruments: Their Design and Application. Tudor. Ed. 2, 1960; 514 pp.

15. Preferred Precision Instrument Components. BuOrd Pamphlet 1755, First Revision. GPO, 1958; 18 sections.

16. K. S. Lion, Instrumentation in Scientific Research: Electrical Input Transducers. McGraw-Hill, 1959; 324 pp.

2.3:1230 Instrumentation: Devices (B)

1. Edw. W. Golding, Electrical Measurements and Measuring Instruments. Pitman, Ed. 4, 1955; 913 pp.

2. Wm. Alexander, Electrical Instruments and Measurements. Cleaver-Hume, 1951; 352 pp.

3. Peter J. Geary, Torsion Devices: Survey of Their Design, Construction and Use. BSIRA Research Rept. R249, 1960; 142 pp.; bibliography.

4. J. Yarnell, Resistance Strain Gages: Their Construction and Use. London, 1951; 128 pp.

5. Guide to Instrument Design. BSIRA and Taylor, 1963; 444 pp.

6. E.H.W.Banner, Electronic Measuring Instruments. Macmillan. Ed. 2, 1958; 496 pp.; translated as Instruments electroniques de mesure, by A. Maitre and M. Bouvier, Dunod, 1959; 480 pp.

7. Bernard Hague, Alternating Current Bridge Methods for the Measurement of Inductance, Capacitance and Effective Resistance at Low and Acoustic Frequencies. Pitman. Ed. 5, 1957; 650 pp.

2.3:1230 Instrumentation: Devices (C)

1. Jacobus J. Koch et al., Strain Gages: Theory and Application. Philips, 1952. (Also issued in German and French).

2. Hans Newmann, Messen mit elektrischen Geräten: Grundlagen und Anwendungen. Springer, 1960; 640 pp.; bibliography

3. H. Kieffer, Jauges de tolerance et controle des pieces. Dunod. Ed. 2, with ISO tolerances, 1961; 390 pp.

4. Hans F. Grave, Gleichrichtermesstechnik: Gleichrichter und Umformer für Messzwecke und ihre Anwendung. Akademische. Ed. 2, 1957; 305 pp.

2.3:1230(C) (Cont.)

5. P. Nashin, Technologie et calcul pratique des systemes asservis: Regulateurs et servomecanismes. Dunod. Ed. 2, 1958; 448 pp.

6. Floris Koppelmann, Wechselstrommesstechnik unter besonderer Berücksichtigung des mechanischen Präzisionsgleichrichters. Springer, 1956; 225 pp.

7. Uri Zelbstein, Technique et utilisation des jauges de contrainte. Dunod, 1956; 255 pp. (Strain Gages).

8. L. Kratz, Glaselektrode und ihre Anwendungen. Darmstadt, 1950; 377 pp.

9. Albert Palm, Heinz Roth and E. G. Schlosser, Registrierinstrumente. Springer, Ed. 2, 1959; 255 pp.

10. Rudolf Schneider, Dreidraht-Gewindemessverfahren. VEB, 1960; 90 pp.

11. Paul M. Pflier, Elektrische Messgeräte und Messverfahren. Springer. Ed. 2, 1957; 287 pp.

12. Theodor Walcher, Trockengleichrichter-Vielfachmessgerät. Springer, 1950; 144 pp.

13. Karl Schmiedel, Prüfung der Elektrizitäts-Zähler: Messeinrichtungen, Messmethoden und Schaltungen. Springer, Ed. 4, 1954; 234 pp.

14. Paul M. Pflier, Elektrische Messungen mechanischer Grössen. Springer. Ed. 4, 1956; 276 pp.

15. Hanns Körwien, Messwerkzeuge; Werkstattmessungen. Leipzig. Ed. 5, 1950; 222 pp.

16. H. Roth and E. G. Schlosser, Registrier-instrumente. Springer, Ed. 2, 1959; 255 pp.

2.3:1230 Instrumentation: Devices. (D)

1. Electronic Measuring Instruments and Equipment (translations of selected Russian papers). OTS Access No. 60-51106. OTS,1962; 415pp. Applied Physics, Instruments and Ultrasonic Equipment (same), OTS Access No. 60-41094; 288 pp.

2. O. Horna, Tensometricke můstky (Strain Gages). CAV. 1960; 246 pp.

2.3:1270 (Cont.)

1. S. M. Elonka and A. R. Parsons, Standard Instrumentation Questions and Answers for Production-Processes Control. v. 1. Measuring Systems. v.2. Control Systems. McGraw-Hill, 1962: 238 & 244 pp.

2. George R. Pitman, Jr., editor, Inertial Guidance. Wiley, 1962; 481 pp.

3. H. F. Grave, Elektrische Messung nichtelektrischer Grössen. Akademische, 1962; 532 pp.

4. H. Weingraber, Technische Härtemessung: Grundlagen, Geräte, Durchführung. 1952; 350 pp.

5. Proceedings of the National Pulp and Paper Instrumentation Symposium (3rd). ISA, 1963; 251 pp.

6. Hans Faltin, Messverfahren und Messgeräte der Kraft- und Wärmewirtschaft. Knapp., Ed. 2, 1955; 624 pp.

7. Roosevelt Griffiths, Thermostats and Temperature Regulating Instruments. Griffin. Ed. 3, 1951; 217 pp.

8. Paul Werkmeister, Geodätische Instrumente. Akademische. Ed. 2, 1950; 181 pp.

9. Adolf Heckelmann, Praktische Vermessungskunde: Einfache Aufnahmen. Instrumente und Wägungen. Essen, 1951; 525 pp.

10. Chas. B. Bread, G. L. Hosmer and A. J. Bone, Principles and Practice of Surveying. v. 1, Ed. 9, 1958, Elementary Surveying; 717 pp. v. 2, Ed. 8, 1962, Higher Surveying; 543 pp.

11. Werner Oeser, Prüfgerate für die Textilindustrie. Stuttgart, Ed. 2, 1952; 272 pp.

12. W. E. K. Middleton and A. E. Spilhaus, Meteorological Instruments, Toronto, Ed. 3, 1953; 286 pp.

13. Physics of Particle Size Analysis. IP. 1954; 218 pp.

14. K. Günther, Messtechnik. DBP. Hamburg, 1962; 494 pp. (Electrical measurements).

15. W. Gohlke, Einführung in die piezoelektrische Messtechnik. Akademische. Ed. 2, 1959; 278 pp.

16. H. Watteeuw, Meetinstrumenten en meetmethoden bij den machinebouw. Brugge. Ed. 3, 1948; 2 vols.

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17. John D. Isaacs and C.J.O'Diselin, editors, Oceanographic Instrumentation (Conference Report). NAS-NRC Pub. 9, 1952; 232 pp.

18. Air Sampling Instrumentation. ACGIH. Ed. 2, 1962; 153 instrument descriptions. (Ed. 1, 1960, was successor to Encyclopedia of Instrumentation for Industrial Hygiene).

19. Richard H. Cerni and L. E. Foster, Instrumentation for Engineering Measurement. Wiley, 1962; 456 pp.

20. Roy D. Gaul et al., editors, Marine Sciences Instrumentation: ISA Conference. Plenum, 1962; 354 pp.

2.3:1300 Automation and Control: General. (A)

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1. Jerzy Dobrski, Aparaty elektromedyczne. Warsaw, 1956; 257 pp.

2. Mikhail N. Livanov, Elektroentsefaloskopiya. Moscow, 1959; 106 pp.

3. Miroslav Brezina and P. Zuman, Polarografie v lekarstvi, biochemii a farmacii. Prague, 1952; 536 pp. Translated and revised by S. Wawzonek as Polarography in Medicine, Biochemistry and Pharmacy. Wiley, 1958; 862 pp.; bibliography; also by Helga Bazantova as Polarographie in der Medizin, Biochemie und Pharmazie, Leipzig, 1956; 800 pp.

4. Vladimir V. Orlov, Pletizmografiya: metody i primenenie v eksperimental'nikh i klinicheskikh issledovaniyakh. Nauk, 1961; 251 pp.

5. Aksel' I. Berg, Elektronika v meditsina. All-Union Conference on Applications of Electronics in Medicine and Biology, Moscow, 1960; 391 pp.

6. Rostislav M. Meshcherskii, Metodika mikroelektrodnogo issledovaniya. Moscow, 1960; 191 pp.

7. Manuel Besoain-Santander, Electrocardiografia elemental. Santiago Bello, 1959; 460 pp.

8. Simeon Karadimov, Elektromeditsinski aparati. Tekhnika, Sofia, 1960; 214 pp.

2.3:3500 Metrology and Calibration. Metrology here simply means measuring (methods, devices, units). Entries are mainly generalities; measurement in some aspect runs all through this Guide. Calibration is interpreted in its customary meaning.

1. Paul Leinweber, G. Berndt and O. Kienzle, editors, Taschenbuch der Längenmesstechnik für Konstruktion, Werkstatt, Messraum und Kontrolle. Springer, 1954; 806 pp.

2. Philip Rush and John O'Keefe, Weights and Measures. Methuen, 1962; 96 pp.

2.3:3500 (Cont.)

3. John Guild, Diffraction Gratings as Measuring Scales: Practical Guide to the Metrological Use of Moire Fringes. Oxford, 1960; 211 pp.

4. Poverochnye skhemi. Standards, Instruments and Metrology Commission, Council of Ministers, USSR. Moscow, 1960; 69 pp.

5. C. West Churchman and Philburn Ratvosh, editors, Measurement: Definitions and Theories. Wiley, 1959; 274 pp.

6. Thos. G. Beckwith and N. L. Buck, Mechanical Measurements. Addison, 1961; 559 pp.

7. Units of Weight and Measure: Definitions and Tables of Equivalents. NBS Misc. Pub. 233, 1960; 62 pp.

8. Milton H. Aronson, editor, Weight Measurement and Control. Instruments, 1961.

9. Ralph W. Smith, Testing of Measuring Equipment. Manual for Weights and Measures Officials. NBS Handbook 45, 1951; 205 pp.

10. J. Burton, Pratique de la mesure et du controle dans l'industrie. Dunod. I. Pressions. Niveaux. Debits, 1958; 400 pp. II. Temperatures. Humidites. Densites, 1959; 392 pp.

11. Precision Measurements and Calibration. NBS Handbook 77, 1961; 3 v. 840 + 965 + 1036 pp.

12. P. Debraine, Unites de mesure des grandeurs physiques. Dunod. Ed. 2, 1961; 186 pp.

13. Maurice D. Papin and J. Vallot, Metrologie generale. Dunod. Ed. 4, 1960. I. Generalites, 223 pp. II. Grandeurs et unites, 204 pp. Metrologie appliquee. Ed. 3, 1955; 365 pp.

14. Kenneth J. Hume, Engineering Metrology. Macdonald, Ed. 2, 1963; 358 pp.; bibliography.

15. Kenneth J. Hume and G. H. Sharp, Practical Metrology. Macdonald, 1953-62; 4 v.

2.3:3600 Testing Materials

1. Arnold E. Lever and Jack Rhys, Properties and Testing of Plastic Materials. Temple. Ed. 2, 1962; 336 pp.

2. H. A. Gardner and G. G. Sward, Paint Testing Manual. Ed. 12, 1962.

2a. Erich Siebel, editor, Handbuch der Werkstoffprüfung. Springer. Ed. 2 in 5 v. I. Prüf- und Messeinrichtungen, Ed. 2, 1958; 890 pp.

2.3:3600 (Cont.)

II. Prüfung der metallischen Werkstoffen, Ed. 2, 1955; 754 pp.
III. Prüfung nichtmetallischer Baustoffe, Ed. 2, 1957; 1026 pp.
IV. Papier- und Zellstoffprüfung, Ed. 3 in preparation (1964).
V. Prüfung der Textilien, Ed. 1 and 2, 1960; 1440 pp.

3. Rudolf Nitzsche and K. W. Wolf, editors, Kunststoffe. Springer, 1961-62. 2 v. I. Struktur und physikalisches Verhalten, 1962; 974 pp. II. Praktische Kunststoffprüfung, 1961; 656 pp.

4. Symposium on Stress-Strain-Time-Temperature Relationships in Materials. ASTM Special Tech. Pub. 325, 1962; 129 pp.

5. Herbert Abraham, Asphalts and Allied Substances: Their Occurrence (v. 1, 1960), Modes of Production (v. 2 and 3, 1961-62), Uses in the Arts (v. 2 and 3), and Methods of Testing. v. 4 (1962), Methods of Testing: Raw-Bituminous Materials, 435 pp; v. 5, (1963) Methods of Testing: Fabricated Bituminous Products, 432 pp.

6. Jas. F. Young, Materials and Processes. Wiley, Ed. 2, 1954; 1074 pp.

7. International Symposium on Plastics Testing and Standardization. ASTM Special Tech. Pub. 247, 1959; 272 pp.

8. K. Wellinger and E. Krägeloh, editors, Werkstoffe und Werkstoffprüfung. (v. 3 in Lueger's Lexikon der Technik, Ed. 4). Springer 1961; 816 pp.

9. H. E. Davis, G. E. Troxell and C. T. Wiskocil, Testing and Inspection of Engineering Materials. McGraw-Hill. Ed. 2, 1955; 431 pp. bibliography.

10. Georg Reicherter, editor, Härteprüfungen nach Brinell, Rockwell, Vickers. Springer. Ed. 2, 1959; 216 pp.

11. A.C.H.Deitz and F.R.Eirich, High Speed Testing. Symposium, 1958. Wiley. 3 v. I, 1960, 120 pp.; II, 1961, 78 pp.; III, 1962, 104 pp.

12. Proceedings of the Japan Congress on Testing Materials. JSTM. I (1957) 179 + 21 + 147 pp. II (1958), 244 + 87 pp. III (1959), 163 + 100 pp. IV (1960), 151 + 73 pp. VI (1962), 156 pp.

13. Richard Glocker, Materialprüfung mit Röntgenstrahlen, unter besonderer Berücksichtigung der Röntgenmetallkunde. Springer. Ed. 4, 1958; 530 pp.

14. Robt. C. McMaster, editor, Nondestructive Testing Handbook. Ronald 1961; 1850 pp. in 2 vol.

15. C. Massonnet, Resistance des materiaux. Dunod, 1962; 520 pp.

16. J. Krautkrämer and H. Krautkrämer, Werkstoffprüfung mit Ultraschall. Springer, 1961; 501 pp.

2.3:3700 Standards; Specifications. Commodity standards, property standards and tolerances, and procedure standards are so numerous that the literature of standards has great numbers of separates. Entries here are mainly guides to aid in locating individual items or publications. Serials issued by standardizing societies or agencies are also important; see 2.9:P1550.

1. DIN Taschenbuch. 19. Materialprüfnormen für metallische Werkstoffe. DNA. Ed. 3, 1961; 294 pp.

2. Specifications, Tolerances and Regulations for Commercial Weighing and Measuring Devices. NBS Handbook H44, Ed. 2, 1955 (Corrected through 1961), 1962; 173 pp.

3. Paul A. Cooley, Ann E. Rapuzzi and A. S. McAllister, National Directory of Commodity Specifications. NBS Mics. Pub. M178, 1945; 1311 pp. Supplement, 1947, 322 pp. Revision assigned to ASA.

4. M. Klein, Einführung in die DIN-Normen. DNA. Ed. 4, 1961; 437 pp.

5. Directory of Technical Specifications: Electronic Test Instruments. TI, 1962, in 6 v.: 1, 2. Sources. 3,4. Modifiers. 5,6. Scalers.

2.4 DISSERTATION GUIDES

Most nations, and many universities individually, publish lists of their academic dissertations. Only a few of those most likely to be useful are listed here; many occur in national bibliographies.

1. Dissertation Abstracts. Microfilms. Monthly, 1938--. (Title was Microfilm Abstracts, 1938-51).

2. Canadian Theses: List of Theses Accepted by Canadian Universities. Ottawa. Annual, 1952--.

3. Master's Theses and Doctoral Dissertations in the Pure and Applied Sciences Accepted by Colleges and Universities of the U. S. Purdue, Annual, 1957--. About 6000 entries per year.

4. Abstracts of Theses. MIT. Annual, 1951--.

5. Jahresverzeichnis der deutschen Hochschulschriften. Leipzig. Annual, 1885--.

6. Index to Theses Accepted for Higher Degrees in the Universities of Great Britain and Ireland. ASLIB. Annual, 1954--.

7. Bibliografiya disertatsii. Doktorskie disertatsii. Annual. Moscow. (Medicine and pharmacy not included).

2.4 (Cont.)

7. Doctoral Dissertations Accepted by American Universities. Wilson. Annual, 1933--. (Preceded by Doctorates Conferred in the Sciences by American Universities. NAS-NRC, 1919-32).

2.5 DIRECTORIES; BUYERS' GUIDES; EXHIBIT GUIDES

Entries in this section are selected solely for probable reference utility. They do not imply or intend any endorsement of the publications or of any groups or interests represented therein.

2.5:D100 Directories. (A).

1. MacRae's Bluebook. Chicago. Annual, 1894--.

2. Instruments and Control Systems: Buyers' Guide. Instruments. Annual, 1944--. Absorbed Instruments Index (biennial, 1940-56).

3. Mechanical Catalog With Directory of Manufacturers of Industrial Equipment, Materials and Supplies. ASME, Annual, 1911--.

4. Heating, Ventilating and Air Conditioning Guide. ASHAE, 1959; 768 + 476 pp.

5. Missile Market and Product Guide. American Aviation. Annual, 1955--.

6. Design News Reference Manual. Detroit. Annual, 1953--.

7. Research Equipment Exhibit. NIH. Annual, 1951--.

8. Aero/Space Engineering Catalog. IAS. Annual, 1945--.

9. Who's Who in Electronics. Cleveland. Annual, 1956--.

10. Electronic Industries Directory. Chilton. Annual, 1943--; All Reference issue added, 1958--.

11. Thomas' Register of Manufacturers. Annual. 1911--(Ed. 53, 1963). I, II, III, Products. IV. Manufacturers' Names; Associations; Periodicals. V. Index. Thomas Micro-Catalogs. Ed. 1, 1963; 33 pp. Lists over 2000 manufacturers whose catalogs are available to subscribers on microfilm.

12. Chemical Engineering Catalog. Reinhold. Annual, 1916--.

13. Radio-Electronic Master. United Catalog. Annual, 1937-- (formerly Radio's Master).

2.5:D100(A) (Cont.)

14. Control Applications Guide. Reinhold. Annual supplement to Automatic Control.

15. Radiation Instrument Catalog. AEC. Irregular, 1949--.

16. Electronic Buyers' Guide. McGraw-Hill, Annual supplement to Electronics, 1941--.

17. Microwave Engineers' Handbook and Buyers' Guide. Horizon. Annual, 1961--.

18. Instrument-Automation Conference and Exhibit. ISA. Annual, 1946--.

19. International Buyers' Guide and Reference Data Manual: Supplement to Nucleonics. McGraw-Hill. Annual, 1943--.

2.5:D100 Directories. (B).

1. Canadian Trade Index.. CMA. Annual, 1900--.

2. Handbook of Scientific Instruments and Apparatus. PS.Annual, 1939--.

3. British Instruments and Buyers' Guide. United. Annual, 1959--. Merger of British Scientific Instruments with Instruments Directory and Buyers' Guide.

4. Engineer Buyers' Guide. Annual Supplement to Engineer (London).

5. British Radio and Electronic Components: Official Catalogue and Buyers' Guide. London, 1957; 318 pp.

2.5:D100 Directories. (C).

1. Handbuch der Maschinen-Industrie. VDMA. Irregular, 1937--. (Directory of West German machine tool manufacturers).

2. Deutsche Industriemesse: Amtlicher Messe-Katalog. DMA. Catalog for each exposition; exhibitors from about 60 trade associations covering broad instrumentation interests.

3. H. von Stutterheim, editor, Industrie der Messtechnik: Warenkatalog der Mess- und Prüfmittel. Darmstadt. Ed. 1, 1956; 704 pp.

4. H. Pietsch, editor, Interkama: Offizieller Ausstellungs-Katalog, Internationaler Kongress mit Ausstellung für Messtechnik und Automatik. Düsseldorf, 1957; 376 pp.

2.5:D100(C) (Cont.)

5. Achema Jahrbuch: Bericht über Stand und Entwicklung des chemischen Apparatewesens. Europäischer Katalog. Dechema. Irregular, 1920-37; no issues, 1938-49; triennial (issued in the middle year), 1950--; Achema XI,1962-63-64. From 1957 in German, French English and Spanish. Lists research institutions, suppliers, trade names.

6. Exposition d'Instruments et Materiels Scientifiques. SFP. Annual, 1904--.

7. Guide des machines, appareils et outils. Geneva, 1951; 1388 pp. (in 5 languages).

2.6 GUIDES TO TECHNICAL LITERATURE AND INFORMATION SERVICES

Manuals of instruction as to sources and use of technical literature are entered here; so are lists of sources and information services.

There is some overlap with Section 2.7; in case of doubt, both sections and the subject index should be consulted.

2.6:G100 Guides: General.

1. Arthur D. Roberts, Introduction to Reference Books. LA. Ed. 3, 1956; 237 pp.

2. Douglas J. Foskett, Information Service. Crosby, 1958; 142 pp.

3. Directory of Continuing Numerical Data Projects. NAS-NRC Pub. 837, 1961.

4. Scientific Information Activities of the NAS-NRC. NRC Pub. No. 1031, 1962; 49 pp.

5. Constance M. Winchell, editor, Guide to Reference Books. ALA. Ed. 7, 1951; 645 pp.; supplements 1950-52; 1953-55; 1956-58.

6. Carter Alexander and Arvid J. Burke, How to Locate Educational Information and Data. Columbia. Ed. 4, 1958; 419 pp.

7. Specialized Science Information Services in the U. S. BMI for NSF. NSF No. 61-68, 1961; 528 pp. In 25 numbered sections, including: 1. Aerospace. 4. Astronomy. 9. Earth Sciences. 10. Electronics and Electrical Engineering. 18. Mathematics. 19. Mechanical Engineering. 20. Medical Sciences and Equipment. 21. General Science and Technology. Lists 427 organizations (Government, academic and private) offering some type of information service.

2.6:G100 (Cont.)

8. Bibliographie des sciences et de l'industrie: Revue de librairie et d'information. Dunod. Monthly, 1903--. I. Livres francais et etrangers. II. Livres etrangers en cours de traduction. III. Revues francaises. (Numerous European publishers issue similar serial lists).

9. Elizabeth G. Bowerman, editor. Union List of Technical Periodicals in 200 Libraries of the Science and Technology Group. SLA. Ed. 3, 1947; 285 pp.

10. Scientific and Technical Serial Publications: U. S., 1950-53, 238 pp.; USSR, 1945-53, 118 pp. LC, 1954.

11. Robt. L. Collison, Library Assistance to Readers. Crosby. Ed. 3, 1960; 131 pp.

12. Science, Government and Information: Responsibilities of the Technical Community and the Government in the Transfer of Information. PSAC, 1963; 52 pp.

13. Laurence F. Schmeckebier and Roy B. Eastin, Government Publications and Their Use. Washington, 1961; 476 pp.

2.6:G200 Guides: Defined Subject Areas.

1. J. Edwin Holmstrom, Records and Research in Engineering and Industrial Science: Guide to Sources, Processing and Storekeeping of Technical Knowledge, With a Chapter on Translating. Chapman. Ed. 2, 1947; 366 pp.

2. Naming and Indexing of Chemical Compounds. Introduction to the Subject Index, Chemical Abstracts, v. 56 (1962). ACS, reprint issued 1962; 98 pp.

3. Sylvia Goldman, Guide to the Literature of Engineering, Mathematics and the Physical Sciences. APL. TG 334-1, 1959; 52 pp.

4. Nathan G. Parke III, Guide to the Literature of Mathematics and Physics Including Related Works on Engineering Science. Ed. 2, 1958; 436 pp. (Supplement by Sylvia Goldman, APL TG 334-1, 1959).

5. Evan J. Crane, Austin M. Patterson and Eleanor B. Marr, Guide to the Literature of Chemistry. Wiley, Ed. 2, 1957; 397 pp.

6. M. Guy Mellon, Chemical Publications: Their Nature and Use. McGraw-Hill, Ed. 3, 1958; 327 pp. (Ed. 4 in preparation, 1963).

2.6:G200 (Cont.)

7. Blanche H. Dalton, Sources of Engineering Information. California, 1948; 198 pp.

8. Jos. Pearlstein, Searching the Literature for Transducer Information. I. Guide to the Literature. OTS, 1959; 57 pp. II. Survey of the Field. DOFL Rept. TR-898, 1960, and supplement, DOFL Rept. TR-996, 1961; 46 pp. HDL.

2.6:G300 Guides: Defined Sources.

1. Reginald R. Hawkins, editor, Scientific, Medical and Technical Books Published in the U. S., 1930-1944: Selected List of Titles in Print, With Annotations. NRC. Ed. 2, 1958, 1491 pp.

2. Directory of Engineering Data Sources: Guide to American Literature in Engineering and Related Sciences. SRI, 1948; 63 pp.

3. Soviet Science and Technology: Bibliography of the State of the Art, 1955-61. LC, 1962.

4. British Scientific and Technical Books: Select List of Recommended Books Published 1953-52. Aslib, 1956; 364 pp. Supplement, 1953-57. Aslib, 1960; 251 pp.

5. Journals in Science and Technology Published in Japan and Mainland China: A Selected List. LC, 1961; 47 pp.

6. Guide to the World's Abstracting and Indexing Services in Science and Technology. NFSAIS, Rept. 102, 1963; 183 pp., 1855 entries.

7. Guide to U. S. Indexing and Abstracting Services in Science and Technology. NFSAIS Rept. No. 101, 1960 (largely superseded by NFSAIS Rept. 102).

2.7 INDEXES OF TECHNICAL LITERATURE

This section has some overlap with 2.6:G300; in case of doubt, consult both sections and the subject index.

2.7:I100 Indexes: General.

1. Index Bibliographicus: Science and Technology. FID. Ed. 4, 1959. (Ed. 1, 1923 and Ed. 2, 1931, were issued by the League of Nations; Ed. 3, Part 1 (Science and Technology), 1951, by UNESCO).

2. Cumulative Book Index. Wilson. Monthly, 1933--; cumulations at intervals.

2.7:I100 (Cont.)

3. Publishers' Trade List Annual: Book Catalogs of U. S. publishers. Bowker. 3 v.

4. Wm. A. Smith and F. L. Kent, editors, World List of Scientific Periodicals Published in the Years 1900-1950. Academic Press. Ed. 3, 1952; 1058 pp.

5. Air University Periodical Index. Air Univ. Quarterly, 1949--. English language literature, about 18,000 entries per year; for official use (unclassified).

6. Oswald T. Zimmerman and Irvin Lavine, Handbook of Material Trade Names. IRS, 1953; 794 pp. Supplements: 1, 1957; 378 pp.; 2, 1958; 356 pp.; 3, 1960; 400 pp.

7. Applied Science and Technology Index. Wilson. Monthly, 1960--; continues Industrial Arts Index, 1913-59; annual and biennial cumulations; around 80,000 entries per year.

8. Repertorium Technicum, 1931--. NIDR. (International bibliography).

9. Eileen C. Graves, editor, Ulrich's Periodicals Directory: A Classified Guide. Bowker, Ed. 10, 1963.

10. New Serial Titles: Union List of Serials Commencing Publication after 31 Dec. 49. LC. I, 1950-55; II, 1956-60; 5-year cumulations planned, 1961--.

2.7:I200 Indexes: Defined Subject Areas.

1. Chemical Titles. ACS. Semimonthly, 1961--. About 75,000 entries per year.

2. Index of Monographs. Bell Labs., 1934--. v.1(1-750); v. 2(751-1199); other issues at intervals in Bell System Technical Journal, to 4289 (July 1963).

3. Bibliography of Agriculture. USDA Library. Monthly, 1942--. Over 100,000 entries per year.

4. Current Contents of Space, Electronic and Physical Sciences. Philadelphia. Weekly, 1961--; tables of contents of about 100 periodicals.

5. Consolidated Index of Selected Property Values: Physical Chemistry and Thermodynamics. NAS-NRC Pub. 976, 1962.

6. British Technology Index. LA. Monthly, 1962--; annual cumulations.

2.7:I300 Indexes: Defined Sources.

1. Soviet Science and Technology: Bibliography of the State of the Art, 1955-61. LC, 1962.

2. Polish Scientific Periodicals: Current Contents With Author Directory. Warsaw. 8-10 issues per year, 1961--.

3. Technical Translations. OTS. Semimonthly, 1959--. Replaced Bibliography of Translations from Russian Scientific and Technical Literature (LC, 1953-56) and Translation Monthly (SLA, 1955-59).

4. Monthly Index of Russian Accessions. LC, 1948--.

5. U. S. Government Research Reports. OTS. Monthly, 1946--. (Title was Bibliography of Technical Reports, 1946-53).

6. East European Accessions List. LC, Monthly, 1952--.

7. Zasshi Kiji Sakuin: Shizen Kagaku-Hen. Japanese Periodical Index: Natural Science. Quarterly, 1950--; about 50,000 entries per year from Japanese literature.

8. Winifred Gregory, editor, Union List of Serials in Libraries of the U. S. and Canada. Wilson, Ed. 2, 1943; 3065 pp.; supplements at irregular intervals.

9. Anne M. Boyd and R. E. Rips, editors, U. S. Government Publications. Wilson. Ed. 3, 1950; 627 pp.

10. NLL Translations Bulletin. NLL. Monthly, 1959--(continues Translated Contents Lists of Russian Periodicals, DSIR, 1954-58).

11. Publications of NBS, 1901-47. NBS Circular 460; 1948; 375 pp. Supplements: 1947-57; 1958; 373 pp.; 1957-60, Misc. Pub. 240, 1961; 391 pp.; 1960-62, 29 pp.

2.8 PATENTS

The paucity of patent citations in reference lists of scientific papers and technical reports surprises patent attorneys. Profound discussions of theory are common in patent specifications. An inventor of a half century ago even patented two pet theological doctrines under the guise of educational devices. To encourage more attention to patents as primary sources of published information, they are given extra emphasis here.

2.8Pa 100: Patents: Official Gazettes and Abridgments.

1. Industriële Eigendom. The Hague. Monthly, 1912--. **Bijblad bij de** Industriële Eigendom. Monthly, 1933--. (Patent Office rulings and announcements).

2. Dansk **Patenttidende**. Copenhagen. Weekly, 1894--. Abridgments.

3. Official Gazette of the USPO. Weekly, 1872--. Mechanical, Electrical and Chemical sections.

4. Canadian Patent Office Record. Ottawa. Weekly, 1873--; claims and drawings. **(Canadian** patents were not printed until 1948).

5. Official Journal (Patents). BPO. Weekly, 1854--. (Title was Commissioner of Patents Journal, 1854-83; Illustrated Official Journal, 1884-1931). See also Abridgments.

6. Bulletin officiel de la propriete industrielle. Paris. Weekly, 1884--. (See also Abreges descriptifs).

7. Patent Office Journal. Pretoria, South Africa. Weekly, 1948--.

8. Auszüge aus den Patentschriften. DPA. Weekly, 1877--.

9. Schweizerische Patent-, Muster- und Modellblatt. Bern. Semimonthly, 1888--.

10. Abridgments of Specifications. BPO. Irregular, 1617--. (Title sometimes Illustrated Abridgments).

11. Tokkyo Koho. Japanese Patent Office. Irregular (every 50 patents), 1885--. Abridgments; in Japanese.

12. Abreges descriptifs des brevets d'invention. Paris. Weekly, 1960--. (Was a section in Bulletin officiel, 1958-59). About 40,000 French patent abridgments per year.

13. Svensk Tidsskrift för Industriellt Rättskydd. Stockholm. Biweekly, 1886--. (Appeared only as a supplement in Industriell Teknik, 1879-1885; thereafter published in both forms). Register till Patent (index). Annual, 1885--.

14. Australian Official Journal of Patents, Trade Marks and Designs. Canberra. Weekly, 1904--.

15. Bollettino dei brevetti: Invenzioni industriali; modelli industriale; marchi d'impresa. Rome. Monthly, 1901--.

2.8: Pa100 (Cont.)

16. Auszüge aus den Patentanmeldungen. DPA. Weekly, 1955--; over 100,000 abridgments per year of German patent applications. Beginning with Ger. P. 1,000,001 the Auslegeschriften (applications open to public opposition) carry a serial number which will also be carried by the final patent if granted. (Auszüge aus den Patentschriften began in 1880.)

17. Patentblatt: Behanntmachungen auf Grund des Patentgesetzes und des Gebrauchsmustergesetzes. DPA. Weekly, 1881--; See also Auszüge.

18. Recueil des brevets d'invention. Brussels. Monthly, 1954--.

19. Österreichisches Patentblatt. Vienna. Monthly, 1899--.

20. Byulleten izobretenii. Moscow. Semimonthly, 1924--. Translated as USSR Official Bulletin of Patents. Derwent. Semimonthly, 1961--, and as USSR Patents and Inventions. Pergamon. Monthly, 1959--.

21. Norsk Tidende for det Industrielle Rettsvern. Avdeling I. Patenter. Oslo. Weekly, 1886--.

22. Erfindungs- und Vorschlagswesen. Amt für Erfindungs- und Patentwesen, DDR. Monthly, 1952--, with Patentkartei (abridgments on cards).

23. Gaceta de la propiedad industrial. Mexico, D. F. Monthly, 1926--.

2.8:Pa200 Patents: Official Searching Aids.

1. Key to the Classifications of the Patent Specifications of France, Germany, Austria, Netherlands, Norway, Denmark, Sweden and Switzerland in the Library of the Patent Office. BPO. Ed. 3, 1915; 190 pp.

2. Manual of Classification. USPO. Looseleaf; current amendments by subscription.

3. Patent Abstract Series. OTS. Irregular (2 or 3 year intervals), 1953--. Abstracts of Government-owned patents offered for license, about 10,000 in all; 7 series, including one for instrumentation and one for electricity and electronics.

4. Gruppeneinteilung der Patentklassen. DPA. Ed. 5, 1951; 398 pp. Ed. 6, 1949; 498 pp. Ed. 7, 1958, looseleaf. Translation: Manual of Patent Classification, German Patent Office. POSL and OTS, 1963. (The subject indexes, not the text, of the 1910 and 1914 editions were translated by N. E. Kuhlmann for POSL, 1911 and 1919).

5. Ukazatel' klassov avtorskykh svidetel'stv i patentov, vydavaemykh v SSSR s pozdrozdeleniem ikh na podklassy, gruppy i podgruppy. Council of Ministers, Moscow, 1962; 824 pp. (Soviet classification manual).

6. Abridgment Class, Classification and Index Key. BPO, London, 1937; 40 Sections in 2 v. Supplements at irregular intervals.

7. Patentliste: Liste des Brevets: Lista dei Brevetti. Swiss Patent Office, Bern. Semimonthly, 1889--; reprinted from Schweizerisches Handelsamtblatt.

8. Indexes of Patents of Invention. BPO. 1854-1857. Subject Matter Index (Made From Titles Only), March 2, 1617 to October 1, 1852; 970 pp (1851). Alphabetical Index of Patentees, 1617-1852; 647 pp. (1854). Chronological Index, 1617-1852; 1554 pp (1854). Reference Index, 1617-1852; 681 + 91 pp. (1855). Subject Matter Index, (annual), 1853 to date. Fifty years Subject Index, 1861-1910, in 146 Sections by classes, in 4 volumes, 1915. Fifty years Subject Index, 1911-1960, for sale by classes in 271 sections.

9. Manual of Classification, French Patent Office. POSL. Translation by N. E. Kuhlmann, in manuscript form.

10. Izobratel'stvo v SSSR. Council of Ministers, Moscow. Monthly, 1956--. (Reports of inventions; technical articles).

11. Internationale Patentklassifikation: Klassen und Unterklassen, Heymann, 1956; 44 pp. (In German, English and French).

2.8:Pa300 Patents: Unofficial Searching Aids.

1. Japan Patent News. Interpas. Monthly, 1960--; about 30,000 Japanese patent citations per year, in 7 separate sections.

2. Index of Patents: 1790-1960. Bowman. 1963. Chemical, 6 v. Electrical, 5 v. Mechanical, 5 v. From 1961 each group will be indexed in the National Catalog of Patents (2.8:Pa200), with the grouping assigned by the U. S. Official Gazette. Include a guide to the classification system, with subclass, subject and number indexes, in each group.

3. National Catalog of Patents. Bowman. Annual, 1961--. Follows the U.S. Official Gazette grouping; 2 or 3 v. per year in each group, some with separate volumes of cross-references from related subclasses to the assigned subclasses.

2.8:Pa300 (Cont.)

4. Erfinder- und Warenschutz im In- und Ausland. DDR, 1956-57. I. E. Arlt and H. Erasmus, Deutschland mit Anhang: Internationale Vorträge, 472 pp. II. H. Erasmus, USSR und Länder der Volksdemokratie, 468 pp. III. Übriges Ausland, 994 + 912 + 878 pp.

5. Russian Patent Abstracts: Chemistry and Chemical Engineering. TI, Monthly, 1960--. (Translated abridgments).

6. Bulletin analytique des brevets francais. AUDD. Annual, 1944--.

7. Uniterm Electronics Patents Service. II. Quarterly, 1955--; cites about 5000 patents per year. Uniterm Index of U.S.Chemical Patents. Bimonthly, 1950--. Index (1950-62) on magnetic tape, 1963.

8. Belgian Patent Reports. Derwent. Biweekly, 1961--. Chemical Patent abstracts.

9. **How to Obtain Information from U. S. Patents. USPO, 1962; 21 pp.**

10. British Patents Abstracts. Derwent. Biweekly, 1954--; about 23,000 abstracts per year. (Preceded by Commonwealth Patent Reports).

11. Eduard Reimer, Europäisierung des Patentrechtes. Heymann, 1956; 305 pp. Europarat Committee report (1951-55) on plans for a common European patent law.

12. French Patents Report. Derwent. Weekly, 1961--. (South African and Indian patents abstracted in some issues).

13. Japanese Patent Abstracts and Japanese Patent Report (new name in 1962). Interpas and Derwent, 1961--. Weekly; translations of abridgments (native Japanese inventions) or of title data (foreign inventions).

14. German Patents Abstracts. Derwent. Weekly, 1956--; about 5600 abstracts per year.

15. Interpas Monthly Patent Data Bulletins. Monthly, 1957--, in 26 separate sections (IPC classes); about 320,000 citations per year of patents from 20 nations.

2.8:Pa400 Patents: Translations.

1. Subject Matter Index of Patents for Inventions (Brevets d'Invention) Granted in France from 1791 to 1876 inclosive. POSL, 1883;934 pp. (Manuscript copy).

2.8:Pa400 (Cont.)

2. Soviet Inventions Illustrated. Derwent. Monthly, 1962--; around 9000 abstracts (with drawings) per year of Soviet patents. Sections: Chemical; Electrical; Mechanical and General. (Former title: Russian Patent Report).

2.9 PERIODICALS AND SERIALS.

Discontinued titles are omitted unless they have special reference utility. Some series of monographs are entered in Section 2.3; the definition of "Serials" is somewhat elastic.

2.9:P100 Instrumentation: General. (A).

1. Lab World. Los Angeles. Monthly, 1950--. Labstracts: Annual Source-book of Laboratory Technic, 1950--.

2. Instruments and Control Systems. Instruments. Monthly; 1928--.(Earlier titles: Instruments and Instruments and Automation.) Instruments Index is one issue in alternate years.

3. SPIE Journal. Bimonthly, 1962--.

4. Design News. Englewood, Colorado. Bimonthly, 1946--.

5. Review of Scientific Instruments. AIP. Monthly, 1930--.

6. ISA Journal. Monthly, 1946--. (As a section in Instruments, 1946-53). ISA Proceedings: Annual, 1947--. ISA Transactions, Quarterly, 1962--. Biomedical Sciences Instrumentation. Annual, 1963--.

7. Research Development. Chicago. Monthly, 1950--. Title was Industrial Laboratories, 1950-59.

2.9:P100 Instrumentation: General. (B).

1. Journal of Scientific Instruments. IP. Monthly, 1923--.

2. Laboratory Practice. United. Monthly, 1952--. (Abstract section, British patents).

3. Instrument Practice: Control Systems; Electronics; Automation. United. Monthly, 1947--.

4. Transactions of the SIT. Quarterly, 1949--. (Quarterly Bulletin and Review included).

4a. Micronics. International Fine Technics Association. Quarterly, 1964--.

2.9:P100(B) (Cont.)

5. Australian Journal of Instrument Technology. SITA. Quarterly, 1945--.

6. R & D Research and Development for Industry. Heywood, 1961--.

7. Instrument Engineer. Luton (England). Semiannual, 1952--.

8. Metric Measures: Journal of Weights and Measures. Delhi. Bimonthly, 1958.

9. Instrument Review: Instruments, Electronics, Automation. London, 1954--.

2.9:P100 Instrumentation: General. (C).

1. Mesures et controle industriel. Paris, 1948--. Continues Mesures (1936-47). Lists French patents.

2. Askania Review. Berlin. Quarterly, 1937--. Also in German, French and Spanish editions.

3. Zeitschrift für Instrumentenkunde. Vieweg. Monthly, 1881-1944, 1947--. Supplement, Deutsche Mechaniker-Zeitung, 1898-1916, appeared separately, 1917-20.

4. Allgemeine Vermessungsnachrichten. Irregular, 1889--; supplement, Bildmessung und Luftbildwesen, 1926-38.

5. TIFO: Technische Informationen Feinmechanik und Optik: Berichte über neue Instrumente des In- und Auslandes. Cologne. Monthly, 1953--.

6. ATM: Archiv für technisches Messen. Monthly, 1931--. Archivteil, about 400 abstracts per year.

7. Instruments et Laboratoires: Revue bilinguale. Dunod. Quarterly, 1957--. Absorbed Laboratoires (1951-56) in 1957.

8. Bulletin annuel de la Societe suisse de chronometrie. Lausanne. Annual, 1959--.

9. Feingeräte Technik. Verlag Technik. Monthly, 1952--; bibliographies.

10. Fijntechniek. Nederlandse Vereniging voor Fijnmechanische Techniek. Utrecht.

2.9:P100 Instrumentation: General. (D).

1. Pribory i tekhnika eksperimenta. Moscow. Bimonthly, 1956--. Translated as Instruments and Experimental Techniques. ISA, 1958--.

2.9:P100(D) (Cont.)

2. Keisoku: Journal of the SIT(Japan). Monthly, 1951--.

3. Priborostroenie. Moscow. Monthly, 1956--. Translated as Instrument Construction, Taylor-F, 1959--.

4. Journal of the Society of Instrument and Control Engineers. Monthly. Tokyo, 1962--. (In Japanese, summaries and captions in English).

2.9:P130 Instrumentation: Special Topics.

1. Horological Journal. BHI. Monthly, 1858--.

2. Methods in Medical Research. Yearbook. Irregular, 1948--. Many instrumentation topics.

3. Bulletin annuel de la SSC et du Laboratoire Suisse de Recherches Horlogeres. Annual, 1932--.

4. Power Test Codes. ASME. Instruments and Apparatus supplements. Irregular 1931--.

5. American Journal of EEG Technology. Phoenix, Arizona, 1961--.

6. Tools of Biological Research. Blackwell. Annual, 1959--.

7. Annales francaises de la chronometrie. CNRS. Quarterly, 1931--. (Abstract section).

8. Military Systems Design. Instruments. Bimonthly, 1957--.

9. Bulletin of Gastroscopy and Esophagoscopy. Washington. Monthly, 1959--. (Was Bulletin of the American Gastroscopic Club, 1942-48, and Bulletin of the American Gastroscopic Society, 1948-58).

10. Medical Electronics News. Instruments. Quarterly, 1961--.

2.9:P170 Company Journals. Some of these are house organs, selected for high concentration of technical matter; some are technical periodicals with a manufacturer's backing.

1. Marconi Instrumentation. Marconi Instruments, Ltd. Quarterly, 1955--.

2. Jenaer Jahrbuch. Zeiss. Annual, 1950--. Jena Review. Irregular, 1956--. Editions also in German, Russian and French. Jena Nachrichten. Irregular, 1954--.

3. Science Tools: LKB Instrument Journal. Irregular, 1954--.

2.9:P170 (Cont.)

4. DuMont Instrument Journal. Quarterly, 1957--.

5. Taylor Technology. Quarterly, 1948--.

6. Aminco Laboratory News. AI. Quarterly, 1945--.

7. Technique: Journal of Instrument Engineering. Muirhead & Co., Ltd. Quarterly, 1947--.

8. Engelhard Industries Technical Bulletin. Quarterly, 1960--.

9. Sperry Engineering Review. Quarterly, 1948--.

10. Instrumentation. M-H. Quarterly, 1943--.

11. Norelco Reporter. Philips. Quarterly, 1954--.

2.9:P200 Computers. Mathematical machines and data processing devices.

1. IBM Journal of Research and Development. Quarterly, 1957--.

2. Digital Computer Newsletter. ONR. Quarterly, 1950--.

3. Information and Control. Academic Press. Quarterly, 1957--.

4. Computers and Automation. Newtonville, Mass. Monthly, 1951--. Annual buyers' guide.

5. Operations Research. ORSA. Quarterly, 1953-- (formerly Journal of the ORSA).

6. Sigma: Tijdschrift voor industrieele statistiek en kwaliteitsbeleid. Rotterdam. Bimonthly, 1956--.

7. Advances in Computers. NBS and Academic Press. Annual, 1960--.

8. Computer Design. Boston. Monthly, 1962--.

9. Technometrics: Journal of Statistics for the Physical, Chemical and Engineering Sciences. ASQC. Quarterly, 1959--.

10. ACM Communications. Monthly, 1958--. Computing Reviews. Bimonthly, 1960--. Journal. Quarterly, 1954--.

11. Proceedings of the Joint Computer Conferences. IRE. About semiannual, 1952--.

12. Computer Journal. BCS. Quarterly, 1958--.

2.9:P200 (Cont.)

13. MTW Mathematik. Technik. Wirtschaft: Zeitschrift für moderne Rechentechnik und Automation. Vienna. Quarterly, 1954--.

14. Datamation. Monthly, 1955--. Los Angeles. (Formerly Magazine of Datamation).

15. ICC Bulletin. Rome. Quarterly, 1962--. Supplement: Computer Laboratories Directory.

16. Elektronische Rechenanlagen. Munich. Bimonthly, 1959--. Beihefte, irregular, 1961--.

2.9:P250A Automation and Process Control.

1. Control Engineering. McGraw-Hill. Monthly, 1954--.

2. Automation. Penton. Monthly, 1954--.

3. Proceedings of the EIA Conference on Numerical Control Systems for Machine Tools. EIA and Reinhold, Irregular, 1957--.

4. Proceedings of the EIA Conference on Automation Systems for Business and Industry. EIA and Reinhold. Irregular, 1958--.

5. Automation Express. IPI. 10 issues per year, 1958--; translations and abstracts from Russian, about 500 per year. (See also Electronics Express; Physics Express; Power Express).

6. Data Systems Engineering (new title, 1963, of Automatic Control). New York. Monthly, 1954--.

7. Automation Reports. Biweekly, 1963--. Commerce Clearing House, Chicago.

2.9:P250B Automation and Process Control.

1. Journal of Electronics and Control. London. Bimonthly, 1955--. Affiliated with Philosophical Magazine.

2. Measurement and Control. London. Monthly, 1962--.

3. Automation in Industry. London. Monthly, 1954--. Supplement. Instrument Review. (Title was Instruments in Industry, 1954-57).

2.9:P250C Automation and Process Control.

1. Automazione e automatismi. Milan. Bimonthly, 1957--; abstract section; emphasis on textiles.

2.9:P250C (Cont.)

2. Kybernetik: Zeitschrift für Nachrichtenübertragerei, Nachrichtenverarbeitung, Steuerung und Regelung in Organismen und in Automaten. Springer. Irregular, 1963--.

3. Automatisme pratique: Regulation et automatique. Dunod. Bimonthly, 1962--.

4. Sprechsaal für Keramik, Glas, Email, Coburg. Semimonthly, 1868--. Supplement: AM + R: Angewandte Mess- und Regeltechnik, semimonthly, 1961--.

5. Automatisierung: Europäische Industrie-Zeitschrift für das gesamte Gebiet der Automatisierung. Hsidelberg. Monthly, 1956--. Special section, Angewandte Elektronik.

6. Regelungstechnische Praxis: Steuern, Regeln und Automatisieren in Betrieb. Munich. Quarterly, 1959--.

7. Automatisme a l'usine et au bureau. Dunod. About monthly, 1956--.

8. Regelungstechnik: Zeitschrift für Steuern, Regeln und Automatisieren. Munich. Monthly, 1953--. Bibliographies.

9. Automazione e strumentazione. Milan. Monthly, 1953--. (Formerly Misure e regolazione).

10. Kybernetik. Springer. About annual, 1963--.

2.9:P250D Automation and Process Control.

1. Jido Seigyo: Automatic Control. Univ. Tokyo. Bimonthly, 1955--. Summaries in English.

2. Pomiary Automatyka Kontrola. Warsaw. Monthly, 1955--.

3. Tzu tung hua: Automation. Peking. Bimonthly. In Chinese; some translations from Russian.

4. Archiwum Automatyki i Telemechaniki. Bimonthly, 1956--. Warsaw. (Summaries in English).

5. Izvestiya Akademiya Nauk: Otdelenie tekhnicheskii Nauk. A. Tekhnicheskaya kibernetika: Avtomatika, telemekhanika, radiotekhnika i elektronika. Nauk. Bimonthly, 1963--. Frequent bibliographies. Name was Avtomatika i telemekhanika, 1936-42, 1947-62; translated as Automation and Remote Control, ISA, 1958--.

6. Avtomatika. Bimonthly, 1960--. Ljubljana, Yugoslavia.

7. Otomeeshon: Automation. Tokyo. Monthly, 1956--; abstract section. Japanese language.

2.9:P250D (Cont.)

8. Mekhanizatsiya i avtomatizatsiya proizvodstva. Moscow. Monthly, 1959--. (Title was Mekhanizatsiya trudoemkykh i tyazhelykh rabot, 1947-58).

2.9:P300A Aerospace Sciences.

1. Missiles and Rockets. Washington. Weekly, 1955--.

2. Astronautics and Aerospace Engineering. AIAA. Monthly, 1963--. Merger of Aerospace Engineering (formerly Aeronautical Engineering, 1942--) with IAS News, 1963.

3. Progress in Aeronautical Sciences. Pergamon. Annual, 1961--.

4. Aircraft Engineering. London. Monthly, 1929--.

5. Planetary and Space Science. Pergamon. Monthly, 1953--.

6. Aerospace Medicine. New York. Monthly, 1930--; current bibliographies.

7. Progress in Astronautics and Aeronautics. AIAA and Academic Press. Irregular, 1960--. (Title was Progress in Astronautics and Rocketry, v. 1-8). Volumes and editors: 1. Solid Propellant Rocket Research (M. Summerfield), 1960; 692 pp. 2. Liquid Rockets and Propellants (L. E. Bollinger et al), 1960; 682 pp. 3. Energy Conversion for Space Power (N. W. Snyder), 1961; 779 pp. 4. Space Power Systems (N. W. Snyder), 1961; 632 pp. 5. Electrostatic Propulsion (D. B. Langmuir et al.), 1961; 579 pp. 6. Detonation and Two-Phase Flow (S. S. Penner et al.), 1962; 368 pp. 7. Hypersonic Flow Research (F. R. Riddell), 1962; 758 pp. 8. Guidance and Control (R. E. Roberson et al.), 1962; 670 pp. 9. Electric Propulsion Development (E. Stuhlinger), 1963; 748 pp. 10. Technology of Lunar Exploration. (C. I. Cummings et al.), 1963; 989 pp.

8. Advances in Space Science and Technology. Academic Press. Annual, 1959--. Supplement: Oswald H. Lange and R. J. Stein, Space Carrier Vehicles, 1963; 350 pp.

9. Space/Aeronautics. New York. Monthly, 1944--.

10. Advances in the Astronautical Sciences. AAS. Irregular, 1949--.

11. Proceedings of the National Telemetering Conference. IAS. Annual, 1950--.

12. AIAA Journal. Monthly, 1963--. (Merger of ARS Journal and Journal of the Aerospace Sciences). Current bibliography, Technical

2.9:P300A (Cont.)

Literature Digest. Russian supplement: translated papers, and bibliography of translated items.

13. Reports (1915-56), Technical Memoranda (translations, 1921-56), and Technical Notes (1915-56). NACA. Irregular. Preceded NASA publications (1957--).

14. ARS Journal. Monthly, 1930-- (original title Jet Propulsion). Merged, 1963, with Journal of the Aerospace Sciences in AIAA Journal.

15. Navigation. Los Angeles. Quarterly, 1946--.

16. Journal of the Astronautical Sciences. AAS. Quarterly, 1953--.

2.9:P300B Aerospace Sciences.

1. Journal of the RAeS. Monthly, 1897--.

2. Spaceflight: Magazine of Aerospace Science and Technology. London. Bimonthly, 1959--.

3. Journal of the BIS. Bimonthly, 1934--; abstract section, about 2000 abstracts per year.

2.9:P300C Aerospace Sciences.

1. l'Homme et l'Espace: Actualité spatiale. Lausanne. Monthly, 1961--.

2. COSPAR Information Bulletin. Paris. Irregular, 1960--.

3. Recherche aerospatiale. ONERA. Bimonthly, 1948--. (Name changed, 1963, from Recherche aeronautique).

4. Astronautica Acta. IAF. Irregular, 1955--.

5. Rivista aeronautica-astronautica-missilistica. Rome. Monthly, 1925--.

6. Astronautik. Stockholm. Irregular, 1960--.

7. Luftfahrttechnik-Raumfahrttechnik. VDI. Monthly, 1955--.

2.9:P300D Aerospace Sciences.

1. Transactions of the JSASS. Tokyo. Irregular. 1958--. In English. Journal of the JSASS. Tokyo. Monthly, 1953--. In Japanese.

2.9:P300D (Cont.)

2. Voprosy Raketnoi Tekhniki. Monthly, 1951--. (Aerospace engineering).

3. Isskustvennie sputniki zemli. Nauk. Irregular, 1958--. Translated as Artificial Earth Satellites. Consultants, 1958--.

2.9:P400 Mathematics and its Applications.

1. Journal of SIAM. Quarterly, 1953--. Series A. Control. Quarterly, 1962. SIAM Review. Quarterly, 1959--.

2. Prikladnaya matematika i mekhanika. Nauk. Bimonthly, 1933--. Translated as Journal of Applied Mathematics and Mechanics, Pergamon, 1958--.

3. Journal of Mathematical Physics. AIP. Monthly, 1960--.

4. Zeitschrift für angewandte Mathematik und Mechanik. Akademie. Monthly, 1921--.

5. Quarterly of Applied Mathematics. Brown Univ., 1943--.

6. Bulletin of the AMaS. Bimonthly, 1895--. Transactions, monthly, 1912--. Proceedings, bimonthly, 1950--. Notices, 7 issues per year, 1954--.

7. Zeitschrift für angewandte Mathematik und Physik ZAMP. Basel. Bimonthly, 1950--. Papers in English, French or German.

8. Journal of Mathematical Analysis and Applications Academic Press, Bimonthly, 1958--.

9. Revue de mathematiques pures et appliquees. Bucharest. Quarterly, 1956--. Papers in French, English, Russian or German.

10. Mathematics of Computation. NAS-NRC. Quarterly, 1943--. (AMaS for NAS-NRC, 1962--.). (Available on Microcards, 1943-56).

11. Journal of Mathematics and Mechanics. Indiana. Irregular, 1952--. (Formerly Journal of Rational Mechanics and Analysis).

12. Journal of Mathematics and Physics. MIT. Quarterly, 1922--.

2.9:P450A Mechanics. Applied physics, engineering and mechanics have complex interrelations, all in turn related to the "mother of all sciences", mathematics. No fine distinctions are drawn in this classified arrangement; the subject index should be consulted.

1. Experimental Mechanics: Journal of the SESA. Monthly, 1961--.

2.9:P450A (Cont.)

2. International Journal of Mechanical Sciences. Pergamon, 1959--.

3. Advances in Applied Mechanics. Academic Press. About biennial, 1948--. Supplement 1: L. Talbot, editor, Rarified Gas Dynamics, 1961; 748 pp. Supplement 2: J. A. Laurmann, Rarefied Gas Dynamics, 1963; (International Symposium on Rarefied Gas Dynamics).

4. Journal of the Mechanics and Physics of Solids. Pergamon. Quarterly, 1953--.

2.9:P450B Mechanics.

1. Quarterly Journal of Mechanics and Applied Mathematics. Clarendon, 1948--.

2. Journal of Fluid Mechanics. Cambridge. Irregular, 1948--.

2.9:P450C Mechanics.

1. Mecanique-Electricite. Paris. Monthly, 1917--. (Title formerly began Revue generale de---).

2. Pratique des industries mecaniques. Paris. Monthly, 1918-- (formerly Ouvrier moderne).

3. Journal de mecanique. Gauthier. Quarterly, 1962--.

4. SFM Bulletin. Quarterly, 1951--.

5. Anales de Mecanica y Electricidad. Madrid. Bimonthly, 1922--.

6. Werkstattstechnik und Maschinenbau: Zeitschrift für Fertigung im Maschinenbau, Apparatebau und Feinmechanik. VDI. Monthly, 1907--.

7. Feinwerktechnik: Zeitschrift für alle Gebiete der feinmechanischen Technik. VDI. Monthly, 1897-1944, 1949--(various titles).

8. Proceedings of the International Congress for Applied Mechanics, Irregular, 1924--. (10th Congress, 1960; Elsevier, 1962; 370 pp.).

9. Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete, Springer. Irregular, 1962--. (In German, English or French).

2.9:P450D Mechanics.

1. Proceedings of Vibration Problems. Warsaw. Quarterly, 1960--. (In English).

2. Archiwum Mechanika Stosowanej: Archives de Mecanique Appliquee. Warsaw. Bimonthly, 1949--. Papers may be in English, French or German.

3. Stanki i instrument. Moscow. Monthly, 1930--. Translated as Machines and Tooling, Production Engineering Research Assoc'n, Leicestershire, 1959--.

4. Revue de mecanique appliquee. Bucharest. Bimonthly, 1956--. (Papers in French, English, Russian or German).

5. Acta Mechanica Sinica. Peking. Quarterly, summaries in English or Russian.

6. Tohoku Daigaku Kosoku Rikigaku Kenkyujo Hokoku: Memoirs of the Institute of High Speed Mechanics. Sendai. Irregular. Summaries in English.

7. Kikai Shikenjo Shoho: Mechanical Laboratory Journal. Tokyo. Bimonthly. Summaries in English.

8. Seimitsu Kikai: Journal of the Society of Precision Mechanics. Univ. Tokyo. Monthly, 1933--; includes a patent section. Summaries in English.

9. Kyushu Daigaku Oyo Rikigaku: Reports of RIAM. Irregular. Japanese language.

10. Monatsschrift für Feinmechanik und Optik. East Berlin. Monthly, 1884--. (Formerly Deutsche optische Wochenschrift)

2.9:P500 Electricity: General. Instrumentation is somewhat diluted in this kind of literature, but always present and seldom hard to find.

1. Electro-Technology: Electrical/Electronic Design Magazine. New York. Monthly, 1928--. (formerly Electrical Manufacturing)

2. Progress in Dielectrics. Annual. Wiley, 1959--.

3. EDN: Electrical Design News. Englewood, Colorado. Monthly, 1956--.

4. Elektrotehniski Vestnik: Electrotechnical Review. Ljubljana. Bimonthly, 1934--. In Serbian; English, German and French summaries.

2.9:P500 (Cont.)

5. Revue generale de l'electricite. Paris. Monthly, 1917--. (Merger of Revue electrique and Lumiere electrique). Cumulative (10-vol.) indexes.

6. Energija: Electric Power Research. Zagreb. Bimonthly, 1953--. In Serbian; summaries in English.

7. Denki Shikenjo Iho: Electrotechnical Laboratory Bulletin. Tokyo. Monthly. Abstract section includes patents.

8. Elektrotehnika u Industriji i Pogonu. Zagreb. Irregular, 1958--.

9. Wissenschaftliche Zeitschrift der Elektrotechnik. Akademische. Quarterly, 1962--.

10. Direct Current: International Conversion Equipment Journal. London. Monthly, 1952--.

11. Revue E: Electricite, Electrotechnique generale, Courants forts et applications. Brussels. Quarterly, 1954--.

12. Elektrie. East Berlin. Monthly, 1947--(formerly Deutsche Elektrotechnik).

13. Power Express. IPI. 10 issues per year, 1961--; about 500 translations or abstracts per year from Russian. (See also Automation Express, Electronics Express, Physics Express).

14. Elektrichestvo. Moscow. Monthly, 1880--. Translated as Electric Technology USSR, Pergamon, 1960--.

15. Electrical Review. London. Weekly, 1872--. Patents section, about 5000 per year.

16. Dielectrics. Heywood. Quarterly, 1963--.

17. Proceedings of the Symposium on Recent Developments in Network Theory. Pergamon. Irregular, 1963--.

18. Proceedings of the Symposium on Precision Electrical Measurements. Irregular, 1963--.

2.9:P530 Electricity: Society Journals.

1. Electrotechnical Journal of Japan: ETJ. IEE (Japan). Quarterly, 1957--; in English. Denki Gakkai Zasshi: Journal of the IEE (Japan). Monthly, 1888--; abstract section includes patents. Translated as Electrical Engineering in Japan. IEEE. Monthly, 1963--.

2. Journal of the IEE. Monthly, 1955--, (Was part of the Proceedings, 1949-54). Proceedings of the IEE. 1872--. A. Power Engineering. Bimonthly. B. Electronic and Communication Engineering. Bimonthly. C. Monographs. Irregular. Supplement No. 3, Nondestructive Testing in Electrical Engineering, 1962; 256 pp.

3. Bulletin de la Societe royale belge des electriciens. Quarterly, 1883--.

4. Transactions of the IRE. Varying frequencies, 1913--. Divided, 1951, in separate Professional Group series, numbering 28 in 1962: Aerospace; Antennas; Audio; Automatic control; Biomedical Electronics; Receivers; Broadcasting; Circuit Theory; Communications; Components; Education; Electron Devices; Computers; Management; Writing and Speech; Human Factors; Industrial Electronics; Information Theory; Instrumentation; Microwaves; Military Electronics; Nuclear Science; Product Engineering; Frequency Interference; Reliability; Space Electronics; Ultrasonics; Vehicular Communications. (IRE and AIEE merged, 1962, as IEEE).

5. Electrotechnology: Journal of the SEE. Bimonthly, 1958--; bibliographies. (Formerly Electrotechnics, 1926-57).

6. Bulletin de la ASE. Biweekly, 1910--. Abstract section, about 2000 per year.

7. VDE Fachberichte. Annual, 1937--. I. Starkstromtechnik. Themengruppen: Energieverteilung. Industrielle Elektrowärme. Umformung. Lastverteilung und Verbundbetrieb. Elektromaschinenbau und Antrieb. Elektrolichttechnik. II. Nachrichtentechnik.

8. EP: Electric Power. BEAMA. Monthly, 1963--.

9. Bulletin de la Societe francaise des electriciens. Malakoff. Monthly, 1884--.

10. Electricien. Paris. Monthly, 1881-1914, 1919--.

11. Transactions of the AIEE. Varying frequencies, 1884--. Divided, 1952--, to include: I. Communications and Electronics. II. Applications and Industry. III. Power Apparatus and Systems. (AIEE and IRE merged, 1962, as IEEE).

12. ETT: Elektroteknisk Tidsskrift. NEF. 32 issues per year, 1888--.

13. l'Elettrotecnica. AEI. Monthly, 1914--.

2.9:P530 (Cont.)

14. Denki Tsushin Gakkai Zasshi: Journal of the IECE. Tokyo. Monthly. Translated as Electronics and Communications in Japan. IEEE, 1963--.

15. ETZ: Elektrotechnische Zeitschrift. VDE. Weekly, 1880--. Divided, 1949, into editions A and B.

2.9:P570 Company Journals. Technology-conscious house organs and technical periodicals with a manufacturer's backing.

1. Mitsubishi Denki Laboratory Report. Mitsubishi Electric Co., Amagasuki, Quarterly, 1960--. Mitsubishi Denki Giho. In Japanese.

2. Revue Brown Boveri. Baden. Monthly, 1914--.

3. Funk-G. Rundschau. Felten. Irregular, 1927--.

4. Toshiba Rebyu: Toshiba Review. Tokyo. Monthly. Summaries in English. (Electricity).

5. AEG Mitteilungen. Irregular, 1911--. AEG Progress (English edition), 1925--. AEG Technische Jahresbericht. Annual, 1928--.

6. Westinghouse Engineer. Pittsburgh. Bimonthly, 1941--.

7. Ericsson Review. Stockholm. Quarterly, 1924--. Editions in English and Swedish. Ericsson Technics. Semiannual, 1933--.

8. Siemens Review. Quarterly, 1925--. English edition of Siemens-Zeitschrift, irregular, 1921--. Entwicklungsberichte Siemens. Irregular, 1938--; mainly reprints.

9. Furukawa Electric Review. Furukawa Electric Co., Ltd. Quarterly, 1956--. (In Japanese, English summaries).

10. Philips Research Reports. Eindhoven. Bimonthly, 1946--. Philips Technical Review. Monthly, 1940--. English, Dutch, French and German editions.

2.9:P600A Electronics: General.

1. Journal of the Electronics Division, ASQC. Irregular, 1962--. Milwaukee.

2. Proceedings of the EIA Conferences on Maintainability of Electronic Equipment. EIA and Reinhold. Irregular, 1958--.

2.9:P600A (Cont.)

3. Electronics Express. IPI. 10 issues per year, 1958--; about 500 translations or abstracts from Russian per year. (See also Automation Express; Physics Express; Power Express).

4. Progress in Semiconductors. Wiley. Annual, 1956--.

5. Electronic Industries, Chilton. Monthly, 1942--, Abstract section; Annual Directory and State-of-the-Art issue.

6. Solid State Design. Dedham, Mass. Monthly, 1960--.

7. Advances in Electronics and Electron Physics. Academic Press. About annual, 1948--. Supplement 1: Henry F. Ivey, Electroluminescence and Related Effects, 1963; 276 pp.

8. Solid State Electronics: An International Journal. Pergamon. Bimonthly, 1960--.

9. Electronic Design. New York. Biweekly, 1952--.

10. Semiconductor Products and Solid State Technology. New York. Monthly, 1958--.

11. Electronics. McGraw-Hill. Weekly, 1930--. Decennial indexes, 1930--. Annual Supplement: Electronics Buyers' Guide. Electronics Engineering Manual, selected reprints in occasional volumes.

12. Proceedings of the National Electronics Conference. AIEE. Annual, 1944--.

13. Microelectronics and Reliability. Pergamon. Quarterly, 1962--. (Name was Electronics Reliability and Miniaturization until 1964).

2.9:P600B Electronics: General.

1. Industrial Electronics. London. Monthly, 1963--. (Absorbed Electronic Technology, 1963).

2. Electronic Technology. London. Monthly, 1923--(formerly Wireless Engineer). Merged, 1963, with Industrial Electronics.

2.9:P600C Electronics: General.

1. Halbleiterprobleme in Referate des Halbleiterausschusses der VDPG. Vieweg. Nearly annual, 1954--.

2.9:P600C (Cont.)

2. Elettronica. Turin. Bimonthly, 1952--. Merger of Televisione italiana and Elettronica e televisione.

3. Revista de informacion electronica. Madrid. Monthly, 1958--.

4. Electronique et l'automatisme: Techniques nouvelles appliquees a l'industrie. Paris. 10 issues per year, 1960--.

5. Revue MBLE. Quarterly, 1958--.

6. Electronic Applications. Philips. Quarterly, 1940--. English and Spanish editions.

7. Toute l'electronique. Paris. Monthly, 1934--. (Formerly Toute la radio).

8. Elektronik: Fachzeitschrift für die gesamte elektronische Technik und ihre Nachbargebiete. Munich. Monthly, 1952--(1952-54 as a supplement in Funkschau).

9. Revue generale d'electronique. Paris. Monthly, 1947--.

10. Elektronische Rundschau. Berlin. Monthly, 1947--(formerly Funk und Ton).

11. Philips Technical Review. Philips. Monthly, 1939--. Editions in English, Dutch, French and German.

2.9:P600D Electronics: General.

1. Erekutoronikusu: Electronics. Tokyo. Monthly, 1956--.

2. Slaboproudy Obzor. Prague. Monthly, 1940--. (Semiconductors).

3. Denshi Kagaku: Electronic Science. Tokyo. 10 issues per year. Japanese language.

4. Przeglad Elektroniki: Electronics. Warsaw. Monthly, 1960--. (Papers sometimes in English).

5. Denshi kogyo: Electronician. Tokyo. Monthly, 1952--. Japanese language.

2.9:P700 Telecommunications: General. Interpreting telecommunications broadly, Sections P700-P730-P750-P770 include audio and video transmission, radar, and other ways of propagating signals. Overlap with electricity and electronics necessitated many arbitrary placement decisions; the subject index will help.

2.9:P700

1. L'Onde electrique. Paris. Monthly, 1921--.

2. NTZ: Nachrichtentechnische Zeitschrift. Vieweg. Monthly, 1949--. English edition: NTZ Communications Journal. Monthly, 1962--.

3. Review of the Electrical Communication Laboratory. Tokyo. Bimonthly, 1953--.

4. GEC Journal of Science and Technology. 3 issues per year, 1934--. GEC Telecommunications. Irregular, 1945--.

5. Telecommunication Journal. ITU. Monthly, 1934--. (Also French and Spanish editions). Name was Journal telegraphique, 1869-1933.

6. Bell System Technical Journal. Bimonthly, 1921--.

7. Western Union Technical Review. New York. Quarterly, 1947--.

8. Bell Laboratories Record. Monthly, 1922--.

9. Western Electric Engineer. New York. Quarterly, 1957--.

10. Dianxin Kexure: Science of Telecommunication. Peking. Monthly. In Chinese; some translations from Russian.

11. Sdelovaci Technika. Prague. Monthly, 1953--. (Telecommunications).

12. Journal of the Institution of Telecommunication Engineers. New Delhi. Bimonthly, 1955--.

13. Science and Industry. Philips. Bimonthly, 1953--.

14. Microwave Research Institute Symposia Series. BPI. Irregular, 1952--.

15. Philips Telecommunication Review. Hilversum. Irregular, 1934--. (formerly Communication News.).

16. G. W. A. Dummer and J. M. Robertson, European Miniature Electronic Components and Assemblies Data Annual. Pergamon, 1961--.

17. G. W. A. Dummer and J. M. Robertson, American Miniature and Microminiature Electronic Assemblies Data Annual. Pergamon, 1961--.

18. G. W. A. Dummer and J. M. Robertson, British Miniature Data Annuals. I. Miniature and Microminiature Electronic Assemblies. II.

2.9:P700

Electronic Components. III. Transistor Diode and Semiconductor Devices. Pergamon, 1961--.

2.9:P730 Telecommunications: Radio.

1. Marconi Review. Quarterly, 1938--.

2. Proceedings of the IRE. Monthly, 1913-62. (Abstract section discontinued, January 1963). (IRE and AIEE merged, 1962, as IEEE).

3. Journal of the Radio Research Laboratory. Tokyo. Bimonthly, 1954--. In English.

4. RCA Review. Quarterly, 1936--.

5. Elektrosvyaż. Monthly, 1929--. Moscow. Translation as Telecommunications (IEEE, 1957-62) joined with translation of Radiotekhnika as Telecommunications and Radio Engineering, IEEE. Monthly, 1963--.

6. Technische Mitteilungen PTT. Monthly, 1923--.

7. Dempa Kenkyujo Kiho: Radio Research Laboratory Review. Tokyo. Quarterly. Summaries in English.

8. Tijdschrift van het Nederlands Radiogenootschap.Delft. Bimonthly, 1937--.

9. Advances in Radio Research. Academic Press. Annual, 1962--.

10. Telefunken Zeitung. Berlin. Irregular, 1928--.

11. Central Radio Propagation Laboratory Ionospheric Predictions. NBS. Monthly, 1945--. (Formerly Basic Radio Propagation Predictions).

12. TELE: Meddelanden fran kungl. Telestyrelsen. Stockholm. Quarterly, 1950--.

13. Funk-Technik. Berlin. Semimonthly, 1946--.

14. Rundfunktechnische Mitteilungen. Hamburg. Bimonthly, 1957--.

15. Hoso gijutsu: Broadcast Engineering. Tokyo. Monthly. Japanese language.

16. Proceedings of the IRE (Australia). Sydney. Monthly, 1940--.

17. Post Office Electrical Engineers' Journal. Quarterly, 1908--.

2.9:P730 (Cont.)

18. Radio Science (formerly Section D. Radio Propagation of the NBS Journal of Research). NBS, Washington. Monthly, 1964--.

2.9:P750 Telecommunications: Electronic Aspects.

1. Radiotekhnika: Nauchnotekhnicheskii i teoreticheskii zhurnal (formerly Radiotekhnik i elektronika). Moscow. Monthly, 1946--. Translated as Radio Engineering and Electronic Physics, IEEE, 1957-62; joined with translation of Elektrosvyaz as Telecommunications and Radio Engineering, IEEE. Monthly, 1963--.

2. Alta frequenza: Rivista di elettronica e telecommunicazioni. AEI. Monthly, 1932--.

3. Radio and Electronic Engineer. BIRE. Monthly, 1939--. (Name was Journal of the BIRE, 1939-62).

4. Wireless World: Electronics, Radio, Television. London. Monthly, 1911--.

5. British Communications and Electronics. Heywood. Monthly, 1954--.

6. Revue HF: Electronique-Telecommunications. Brussels, Quarterly, 1949--.

7. National Telemetering Conference. IEEE. Annual, 1954--.

8. Radio-electronics. New York, Monthly, 1954--. (formerly Radio-electronic Engineering).

2.9:P770 Telecommunications: Devices; Frequencies.

1. Microwave Journal. Dedham, Mass. Monthly, 1958--.

2. Hochfrequenztechnik und Elektroakustik: Jahrbuch der drahtlosen Telegraphie und Telephonie. Akademische. Bimonthly, 1907--.

3. Point to Point Telecommunications: Journal for the Telecommunications Engineer. Marconi. Three issues per year, 1959--.

4. Frequency: Generation, Selection, Control, Measurement. Brookline, Mass. Bimonthly, 1962--.

5. Short Wave Magazine. London. Monthly, 1943--.

6. British Transistor Diode and Semiconductor Devices Data Annual. Pergamon, 1962--.

2.9:P770 (Cont.)

7. Proceedings of the MRI Symposia Series. Wiley. Annual, 1952--.

8. Cables et transmissions. SOTELEC. Quarterly, 1947--.

9. RRE Journal. Irregular, 1937--. (Title was TRE Journal, 1937-53).

10. Frequenz: Zeitschrift für Schwingungs-und Schwachstromtechnik. Berlin. Monthly, 1947--.

11. Microwave Tube Characteristics Tabulation. Semiannual. Semiconductor, Diode and Rectifier Characteristics Tabulation. Semiannual. Transistor Characteristics Tabulation. Quarterly. DATA, 1956--.

12. Festkörperprobleme. Vieweg. About annual, 1954--. (Title was Halbleiterprobleme, 1954-1961). (Semiconductors).

2.9:P800 Heat; Temperature; Cryoscopy. Temperature measurement over the entire known range is included. In temperature control there is some overlap with 2.3:1370, Process Control. The word Cryoscopy is not rigidly interpreted; here it means from 0°K. to about liquid air temperature.

1. International Journal of Heat and Mass Transfer. Pergamon. Bimonthly, 1960--. Bibliographies.

2. Revue generale de thermique. Paris. Monthly, 1962--. (Merger of Chaleur et industrie and Flamme et thermique).

3. Combustion. New York. Monthly, 1929--. (Combustion of 1910-29 took the name Engineering and Finance from 1929, ceding the old title to the new journal).

4. Varme: Dansk tidsskrift for Varme--, Ventilations-of Sanitetsteknik. Copenhagen. Bimonthly, 1936--.

5. Advances in Cryogenic Engineering: Proceedings of the Cryogenic Engineering Conference. Plenum. Annual, 1954--.

6. Teplofizika vysokikh temperatur. Nauk. Bimonthly, 1963--. (High temperature thermodynamics, rocket power, atomic power).

7. Communications from the Kammerlingh Onnes Laboratory of the University of Leiden. Irregular, 1885--.

8. Teionkagaku; Butsuri Hen: Cryoscopy. A. Physical Sciences. B. Life Sciences. Hokkaido. Irregular. Summaries in English.

9. Cryogenics: International Journal of Low Temperature Engineering and Research. Heywood. Quarterly, 1961--.

2.9:P800 (Cont.)

10. Progress in Cryogenics. Academic Press. Annual, 1959--.

11. Revue des hautes temperatures et des refractaires. Masson. Quarterly, 1964--.

2.9:P830A Light; Optics; Photography. Association of P830 and P870 with P800 is an obeisance to the old "Heat, Light and Sound" subdivision of physics in college textbooks. The arrangement is not a searching aid but is not expected to be a hindrance either.

1. Journal of the OSA. Monthly, 1917--. Cumulative index, 1917-50.

2. Photogrammetric Engineering. ASP. Quarterly, 1934--.

3. Illuminating Engineering. New York. Monthly, 1907--.

4. Radiation Research. Academic Press. Monthly, 1954--.

5. Applied Spectroscopy. SAS. Quarterly, 1947--.

6. Transactions of the AMiS. Quarterly, 1878--.

7. Advances in Spectroscopy. Interscience. Irregular, 1959--. (v. 1, 1959, 371 pp.; v. 2, 1962, 428 pp.).

8. Spectrochimica Acta. Pergamon. Monthly, 1945--.

9. Applied Optics. OSA. Monthly, 1962--.

10. SMPTE Journal. Monthly, 1916--.

11. Astrophysical Journal: International Review of Spectroscopy and Astronomical Physics. Chicago. Bimonthly, 1895--. Supplement, 1954--.

12. Photographic Science and Engineering. SPSE. Quarterly, 1950--. (Title changed from Photographic Engineering, 1957).

13. Infrared Physics: International Research Journal. Pergamon. Quarterly, 1961--.

14. Journal of Ultrastructure Research. Academic Press. Monthly, 1959--.

2.9P830B Light; Optics; Photography.

1. Optica Acta: International Journal of Optics. London. Irregular, 1954--.

2.9:P830B (Cont.)

2. Radiography. London. Monthly, 1935--. (Supplement in British Journal of Radiography, 1935-53).

3. Journal of the RMiS. Quarterly, 1878--.

4. Transactions of the IES. Monthly, 1936--.

5. Hilger Journal. London. Irregular, 1949--.

6. Television Society Journal. London. Quarterly, 1928--.

7. Journal of Photographic Science. RPS. Bimonthly. 1953--. Superseded Photographic Journal. B. Scientific and Technical Photography, 1948-52.

8. Photographic Journal. RPS. Monthly, 1853--.

9. Photoelectric and Spectrometry Group Bulletin. Cambridge (England). Irregular, 1958--.

10. Proceedings of the International Symposium on Photoelasticity. Pergamon. Irregular, 1963--.

2.9:P830C Light; Optics; Photography.

1. Proceedings of the ICI. Irregular (biennial to quinquennial), 1913--.

2. Optiknaemnden. Handlingar. Stockholm. Irregular, 1950--.

3. Science et industries photographiques. Paris. Monthly, 1921--.

4. Mikrokosmos: Zeitschrift für angewandte Mikroskopie. Stuttgart. Monthly, 1907--.

5. Bulletin de microscopie appliquée. Paris. Bimonthly, 1950--; abstract section, about 2400 abstracts per year.

6. Zeitschrift für wissenschaftliche Photographie Photophysik und Photochemie. Barth. Irregular, 1903--.

7. Atti della Fondazione Giorgio Rondhi e Contributi dell 'Istituto Nazionale di Ottica. Florence. Bimonthly, 1946--.

8. Zeitschrift für wissenschaftliche Mikroskopie und mikroskopische Technik. Hirzel. Irregular, 1894--.

9. Journal de microscopie. Paris. Quarterly, 1962--.

2.9:P830C (Cont.)

10. Television. Paris. Monthly, 1939--.

11. Lichttechnik. Berlin. Monthly, 1949--.

12. Strahlentherapie. Berlin. Monthly, 1912--.

13. Optik: Zeitschrift für das gesamte Gebiet der wissenschaftlichen und angewandten Optik. Stuttgart. Monthly, 1946--.

14. Revue d'optique theorique et instrumentale. Paris. Monthly, 1922--. Abstract section.

15. Photo-Technik und - Wirtschaft. Berlin. Monthly, 1952--.

16. Zeiss Mitteilungen über Fortschritte der technischen Optik. Stuttgart. Irregular, 1961--. Zeiss Information (new title, 1963, of Zeiss Werkzeitschrift). Quarterly, 1953--.

17. Progress in Optics. Amsterdam. Irregular, 1960--.

2.9:P830D Light; Optics; Photography.

1. Optika i spektroskopiya. Moscow. Monthly, 1957--. Translated as Optics and Spectroscopy, OSA, 1959--.

2. Kristallografia. Nauk. Bimonthly, 1956--. Translated as Soviet Physics; Crystallography. AIP, 1957--.

3. Journal of Electron Microscopy. SEM. 3 issues per year, 1953--.

2.9:P870 Acoustics; Ultrasonics.

1. Journal of the AES. Quarterly, 1953--.

2. Noise Control. AIP. Bimonthly, 1955-61.

3. Documentazione di ultracustica. Rome. Annual, 1954--. (Ultrasonics bibliographies).

4. Ultrasonic News. Stamford, Conn. Quarterly, 1957--.

5. Acustica: International Journal of Acoustics (British, German, French). Hirzel. Bimonthly, 1951--. Supplement: Akustische Beihefte.

6. Ultrasonics: Principles and Practice of Ultrasonics and Allied Technology, London. Quarterly, 1963--.

2.9:P870 (Cont.)

7. Akusticheskii Zhurnal. Nauk. Quarterly, 1955--. Translated as Soviet Physics: Acoustics. AIP, 1956--.

8. Sound: Its Uses and Control. AcSA. Bimonthly, 1962--.

9. Journal of the AcSA. AIP. Monthly, 1929--.

10. Nihon Onkyo Gakkai-shi, Tokyo. Quarterly. Summaries in English; abstracts; bibliographies. (Acoustics).

11. Journal of Sound and Vibration. Academic Press. Quarterly, 1964--.

2.9:P900A Atomic and Nuclear Energy.

1. Nuclear Safety. AEC. Quarterly, 1960--.

2. Progress in Nuclear Physics. Pergamon. About annual, 1950--.

3. International Journal of Applied Radiation and Isotopes. Pergamon. Monthly, 1950--.

4. Radiochimica Acta. Academic Press. Irregular, 1963--.

5. Nucleonics. McGraw-Hill. Monthly, 1947--.

6. Bettis Technical Review: Reactor Technology. AEC. Irregular, 1957--.

7. Radiation Research. Academic Press. Bimonthly, 1954--. Supplements 1 and 2: Proceedings of the International Congress of Radiation Research (1958 and 1959), 1959 and 1960; 582 & 685 pp.

8. Journal of Nuclear Energy. Pergamon, 1954--. A and B: Reactor Science and Technology, monthly. C: Plasma Physics; Accelerators; Thermonuclear Research, bimonthly.

9. Progress in Nuclear Energy. Pergamon. Irregular, 1956--. In 12 series: I. Physics and Mathematics. II. Reactors. III. Process Chemistry. IV. Technology, Engineering and Safety. V. Metallurgy and Fuels. VI. Biological Sciences. VII. Medical Sciences. VIII. Economics. IX. Analytical Chemistry. X. Law and Administration. XI. Plasma Physics and Thermonuclear Research. XII. Health Physics.

10. Nuclear Science and Engineering. New York. Monthly, 1956--.

11. Power Reactor Technology. AEC. Quarterly, 1958--.

12. Plasma Physics and Thermonuclear Research. Macmillan. Irregular, 1962--.

2.9:P900B Atomic and Nuclear Energy.

1. Nuclear Engineering. London. Monthly, 1956--.

2. Molecular Physics. London. Bimonthly, 1958--.

3. Journal of the BNES. Quarterly, 1962--.

4. Nuclear Power: Reactors, Materials, Instrumentation, Processes, Irradiation. London. Monthly, 1956--.

5. Proceedings of the Symposium on Neutron Detection, Dosimetry and Standardization. IAEA. Irregular, 1963--.

6. Proceedings of the 1st International Conference on Paramagnetic Resonance. Academic Press. Irregular, 1963--. (First issue, 921 pp. in 2 v.).

2.9:P900C Atomic and Nuclear Energy.

1. Journal of Nuclear Materials. Amsterdam. Irregular, 1959--. English, French or German; summaries in Russian.

2. Energie nucleaire. Soprodoc. Quarterly, 1956--.

3. List of Bibliographies on Nuclear Energy, 1960--. List of Periodicals in the Field of Nuclear Energy, 1961--. List of References on Nuclear Energy, 1959--. IAEA. Irregular (up to semimonthly).

4. Beiträge aus der Plasmaphysik. Akademie. Quarterly, 1961--.

5. Nuclear Instruments and Methods: Accelerators, Instrumentation and Techniques in Nuclear Physics. Amsterdam. Monthly, 1957--.

6. Atomic Energy Review. IAEA. Irregular, 1963--.

7. Nukleonik. Springer. Bimonthly, 1959--. Some papers in English.

8. Atom und Strom. Frankfurt. Monthly, 1955--. (Supplement to Elektrizitätswirtswirtschaft).

9. Nuclear Physics. Amsterdam. Biweekly, 1957--. Papers in English, French or German.

10. Atomkernenergie: Ihre Anwendung in Wissenschaft, Technik und Wirtschaft. Munich. Monthly, 1956--.

11. Nuclear Fusion: Journal of Plasma Physics and Thermonuclear Fusion. IAEA. Quarterly, 1961--. (English, French, Russian and Spanish).

2.9:P900C (Cont.)

12. Bulletin d'informations scientifiques et techniques du commissariat a l'energie atomique. Dunod. Monthly, 1958--.

13. Neue Physik: Zeitschrift für die Gebiete der Atom- und Strahlungsphysik. Vienna. Irregular, 1959--.

14. Energia nucleare: Rivista mensile edita dal CISE. Monthly, 1954--.

15. Kerntechnik: Isotopentechnik und - Chemie. Munich. Monthly, 1959--.

16. Energie nucleaire: Revue de physique et de chimie nucleaires et de genie atomique. Paris. Semiquarterly, 1959--.

2.9:P900D Atomic and Nuclear Energy.

1. Nihon Genshiryoku Kenyujo Chosa Hokoku Tokyo. Irregular. Summaries in English. (Atomic energy reports).

2. Bulletin of the INSBK. Irregular, 1951--. Mostly English; summaries in French and Russian.

3. Polski Przeglad Radiologii i Medycyny Nuklearnej. Warsaw. Bimonthly, 1937--. Summaries in English.

4. Atomnaya energiya. Moscow, 1957--. Translated as Soviet Journal of Atomic Energy. Consultants, 1958--. (formerly called Atomic Energy (USSR)). Selected translations also, in German, in Kernenergie.

5. Nukleonika. Warsaw. Bimonthly, 1956--. Translated into English in Poland as Nukleonika, AEC and OTS, 1956--.

6. Kernenergie: Zeitschrift für Kernforschung und Kerntechnik. East Berlin. Monthly, 1958--. Includes selected translations from Atomnaya energiya.

7. Nihon Genshiryoku Gakkai shi: Journal of the AES (Japan). Monthly, 1959--. English summaries.

2.9:P1000A Geophysics: General.

1. Geophysics. Tulsa. Bimonthly, 1936--. Abstract section (patents added, 1939).

2. Transactions of the AGU, NRC. Quarterly, 1920--. Also: Journal of Geophysical Research, semimonthly, 1920--. Reviews of Geophysics, quarterly, 1963--. Geophysical Monograph Series, irregular, 1956--.

2.9:P1000A (Cont.)

3. Advances in Geophysics. Irregular (1 to 3 years), 1952--. U. S. Weather Bureau and Academic Press.

4. Reviews of Geophysics. AGU. Quarterly, 1963--.

5. Journal of Geophysical Research. Washington. Quarterly, 1896--. (Formerly Terrestrial Magnetism and Atmospheric Electricity).

2.9:P1000B Geophysics: General.

1. Geophysical Journal of the RAS. Quarterly, 1957--.

2.9:P1000C Geophysics: General.

1. Bollettino di geofisica teorica ed applicata. Trieste. Quarterly, 1959--.

2. Geofisica pura e applicata. Milan. 3 issues per year, 1910--.

3. Arkiv för geofysik. Stockholm. Irregular, 1950--.

4. Geophysica. Helsinki. Irregular, 1935--. Series: General Geophysics and Meteorology. Papers in English or German.

5. Annales de geophysique. CNRS. Irregular, 1944--.

6. Tellus: Journal of Geophysics. Stockholm. Quarterly, 1949--. Papers in English, French or German.

7. Annali di geofisica. Rome. Quarterly, 1948--.

8. Geofysiske publikasjoner. Oslo. Irregular, 1920--.

9. Beiträge zur angewandten Geophysik (Gerlands). Leipzig. Irregular, 1930--. Supplements: Ergänzungshefte für angewandte Geophysik und Ergebnisse der Kosmischen Physik.

2.9:P1000D Geophysics: General.

1. Geofysikalni Sbornik. CAV. Irregular, 1953--.

2. Anales del Instituto de Geofisica. Mexico City. Annual, 1955--.

3. Studia Geophysica et Geodaetica. CAV. Quarterly, 1957--. Papers in English, German or Russian.

4. Acta Geophysica Sinica. Peking. Semiannual. Summaries in English or Russian.

2.9:P1000D (Cont.)

5. Zhurnal geofiziki. Moscow. Irregular, 1924--. (Title was Zhurnal geofiziki i meteorologii, 1924-29).

6. Acta Geodetica et Cartographica Sinica. Peking. Quarterly. Summaries in Russian.

7. Trudy Geofizicheskogo Instituta. Nauk. Irregular, 1948--.

8. Acta Physica Polonica. Warsaw. Irregular, 1941--. Papers may be in English, German or French. Supplement, irregular.

9. Przeglad Geofizyczny. Warsaw. Quarterly, 1956--. Summaries in English.

10. Doklady: Earth Sciences Sections. See Doklady in 2.9:P1600.

2.9:P1050 Geophysics: Special Topics.

1. Jishin. SSJ. Quarterly. Summaries in English. (Seismology).

2. Journal of Atmospheric Sciences. AMeS. Bimonthly, 1944--. (Formerly Journal of Meteorology).

3. International Geology Review. AGI. Monthly, 1959--. Translations from foreign languages, chiefly Chinese, Japanese and Russian.

4. Kenshin jiho: Quarterly Review of Seismology. Tokyo. Summaries in English.

5. Geochimica et Cosmochimica Acta. Pergamon. Bimonthly, 1951--.

6. Nihon Kaiyo Gakkai-shi. Tokyo. Quarterly. Summaries in English. (Oceanography).

7. Daigaku Chishin Kenkyuho Iho. Tokyo. Bimonthly. Summaries and some papers in English. (Seismology).

8. Quarterly Journal of the RMS, 1871--.

9. Acta Meteorologica Sinica. Peking. Quarterly. Summaries in English or Russian.

10. Journal of Atmospheric and Terrestrial Physics. Pergamon. Monthly, 1939--.

11. Zeitschrift für Meteorologie. Akademie. Monthly, 1947--.

12. Bulletin of the SSA. Quarterly, 1911--.

2.9:P1050 (Cont.)

13. Oceanologica et Limnologica Sinica. Peking. Semi-annual. Summaries in English or Russian.

14. Diquiwuli Kantan: Geophysical Surveying. Peking. Irregular. In Chinese; some translations from Russian.

15. Kisho Shushi: Meteorology. Tokyo. Bimonthly. Summaries in English.

16. Indian Journal of Meteorology and Geophysics. New Delhi. Quarterly, 1950--.

17. Kenkyu Jiho: Journal of Meteorological Research. Tokyo. Monthly. Kishocho Iho: Memoirs. Irregular. Summaries in English.

18. Izvestiya AN SSSR: Otdelenie geologicheskie. Nauk. Monthly, 1937--. Translated as Izvestiya of the Academy of Sciences of the USSR, Geologic Series. NAS-NRC for AGI. Monthly.

19. Journal de mecanique et physique de l'atmosphere. Paris. Quarterly, 1949--)formerly Journal scientifique de meteorologie).

2.9:P1100A Physics: General. The boundary between "general" and "applied" physics is fuzzy; the distinction is mainly a convenience for keeping groups of entries down to manageable size.

1. Physical Review. AIP. Semimonthly, 1893--; weekly, 1964--. Cumulative indexes, 1893-1920, 1921-50; Author index, 1956-60. Physical Review Letters. Semimonthly, 1955--.

2. Brandeis University Summer Institute Lectures in Theoretical Physics. Benjamin. Annual, 1960--. (1962 Lectures in 3 v.): 1. Elementary Particle Physics. 2. Astrophysics and the Many-Body Problem. 3. Statistical Physics.

3. American Journal of Physics. AIP. Monthly, 1933--.

4. Reviews of Modern Physics. AIP. Quarterly, 1929--.

5. Annals of Physics. Academic Press. Monthly, 1957--.

2.9:P1100B Physics: General.

1. Proceedings of the Physical Society. London. Monthly, 1874--.

2. Philosophical Magazine. London. Monthly, 1798--.

2.9:P1100B (Cont.)

3. Canadian Journal of Physics. Ottawa. Monthly, 1929--.

4. Journal of the Physics and Chemistry of Solids. Pergamon. Monthly, 1962--. Letters section: Solid State Communications. Monthly, 1963--.

5. Physics of Thin Films: Advances in Research and Development. Academic Press. Annual, 1963--.

2.9:P1100C Physics: General.

1. Nederlands Tijdschrift voor Natuurkunde.Utrecht. Monthly, 1934--.

2. Fra Fysikkens Verden. NFS. Quarterly, 1939--.

3. Physics Letters. Amsterdam. Monthly, 1962--.

4. Arkiv för fysik. Stockholm. Monthly, 1949--.

5. Zeitschrift für Astrophysik. DPG. Irregular, 1930--.

6. Annalen der Physik. Barth. Irregular, 1799--. Beiblätter (with abstracts), 1877-1919, merged with Physikalische Berichte, 1920.

7. Zeitschrift für Physik. DPG. Irregular, 1920--.

8. Annales de physique. Paris. Monthly, 1815--. (Separated, 1915, from Annales de chimie et de physique, 1815-1914).

9. Physikalische Blätter. VDPG. Monthly, 1945--. Supplement, Physikalische Abhandlungen, Monthly, 1950--.

10. Cahiers de physique: Theorie, syntheses et mises au point. Paris. Monthly, 1947--.

11. Physica. Utrecht. Monthly, 1933--.

12. Journal de physique. Gauthier. Monthly, 1872--. Cumulative index, 1872-1901. (et le radium dropped from title, 1963).

2.9:P1100D Physics: General.

1. Uspekhi fizicheskikh nauk. Moscow. Monthly, 1938--. Translated as Soviet Physics: Uspekhi. AIP, 1957--.

2. Fizika tverdogo tela. Nauk. Monthly, 1959--. Translated as Soviet Physics: Solid State. AIP, 1959--.

2.9:P1100D (Cont.)

3. Zhurnal eksperimental'noi i teoreticheskoi fiziki. Nauk. Monthly, 1943--. (Formerly Fizicheskii Zhurnal. A.). Translated as Soviet Physics: JETP. AIP, 1955--.

4. Czechoslovak Journal of Physics. CAV. Irregular, 1951--.

5. Soviet Physics: Doklady. See Doklady in 2.9:P1600.

6. Fortschritte der Phyik. East Berlin. Monthly, 1953--.

7. Nihon Butsuri Gakkaishi: Journal of PS (Japan). Monthly, 1946--. Japanese language. (Physics).

2.9:P1150A Physics: Applied.

1. Physics of Fluids. AIP. Monthly, 1958--.

2. Journal of Applied Physics. AIP. Monthly, 1930--. Absorbed Journal of Rheology, 1933.

3. Solid State Physics. Academic Press. About annual, 1955--. Supplements: I. T.P. Das and E. L. Hahn, Nuclear Quadruple Resonance Spectrography, 1958; 223 pp. II. Wm. Low, Paramagnetic Resonance in Solids, 1960; 212 pp. III. A. A. Maradudin, E. W. Montroll and G. H. Weiss, Theory of Lattice Dynamics in the Harmonic Approximation, 1963; 325 pp. IV. Albert C. Beer, Galvanomagnetic Effects in Semiconductors, 1963; 250 pp.

4. APL Technical Digest. Bimonthly, 1961--.

5. Sperryscope. Sperry. Quarterly, 1941--. (Also Sperry Engineering Review).

6. Applied Physics Letters. AIP. Semimonthly, 1962--.

7. Physics Express. IPI. 10 issues per year, 1958--; about 500 translations and abstracts per year from Russian. (See also Automation Express; Electronics Express; Power Express).

8. Journal of Sound and Vibration. Academic Press. Quarterly, 1964--.

2.9:P1150B Physics: Applied.

1. British Journal of Applied Physics. IP. Monthly, 1950--.

2. Notes on Applied Science. NPL. Irregular, 1951--. Includes instrumentation.

2.9:P1150C Physics: Applied.

1. Philips Research Reports: Journal of Theoretical and Experimental Research in Physics, Chemistry and Allied Fields. Philips. Bimonthly, 1946--.

2. Nuovo cimento. SIF. Semimonthly, 1855--. Papers largely in English; Italian, French, Spanish and German also accepted. Supplement, irregular, carries conference proceedings and special contributions.

3. Physik der kondensierten Materie. Springer. Irregular, 1962--. (German, French or English).

4. Biophysik. Springer. Irregular, 1963--.

5. Zeitschrift für angewandte Physik. Springer. Monthly, 1948--.

6. Journal of Applied Mathematics and Physics. Basel. Bimonthly, 1950--. (Titles also in French and German).

7. Physica Status Solidi. Akademie. Irregular, 1961--. (German or English).

2.9P1150D Physics: Applied.

1. Japanese Journal of Applied Physics. Tokyo. Monthly, 1962--. In English.

2. Oyo butsuri: Journal of Applied Physics. Tokyo. Irregular. Summaries in English.

3. Experimentelle Technik der Physik. East Berlin. Bimonthly, 1953--.

4. Zhurnal tekhnicheskoi fiziki. Moscow. Monthly, 1931--. Translated as Soviet Physics: Technical Physics. AIP, 1956--.

5. Indian Journal of Pure and Applied Physics. Pergamon. Monthly, 1963--.

2.9:P1200A Engineering. The distinction between "engineering" and "applied physics" is artificial and may blur at times, but is not difficult. As drawn here, it is much like the difference between laboratory scale and plant scale operations in chemical research and industry.

1. SAE Journal. Monthly, 1917--.

2. Solar Energy: Journal of Solar Energy Science and Engineering. Tempe, Ariz. Quarterly, 1957--. Sun at Work. Tempe, Ariz. Quarterly, 1956--.

2.9:P1200A (Cont.)

3. Product Engineering. McGraw-Hill. Monthly, 1930--.

4. Transactions of the AIMMEE. Varying frequencies, 1871--. Divided, 1950, into: Journal of Metals, Journal of Petroleum Technology, Mining Engineering. (Became AIMMPE, 1956).

5. Bulletin of Research. UL. Irregular, 1937--.

6. Vacuum: International Journal and Abstracting Service for Vacuum Science and Technology. Pergamon. Monthly, 1951--. Abstract section.

7. American Machinist. McGraw-Hill. Biweekly, 1877--.

8. Transactions of the ASME. Monthly, 1880--. Divided, 1959, into: A. Journal of Engineering for Power. B. Journal of Engineering for Industry. C. Journal of Heat Transfer. D. Journal of Basic Engineering. E. Journal of Applied Mechanics.

9. International Congress on Vacuum Techniques. ICVT and Pergamon. Annual, 1961--. Merged, 1961, with National Symposium on Vacuum Technology. AVS and Pergamon. Annual, 1954-60.

10. Textile Research Journal. TRI. Monthly, 1925--.

11. Refrigerating Engineering. ASRE. Monthly, 1923--. Successor to Transactions of the ASRE, 1905-14, and Journal of the ASRE, 1914-22.

12. SPeE Journal. Monthly, 1945--. SPeE Transactions. Quarter, 1961--.

2.9:P1200B Engineering.

1. Proceedings of the IME. Monthly, 1847--. Journal of the IME, 1939--. Cumulative index, 1847-1942.

2. Journal of the IE, 8 issues per year, 1929--. Transactions of the IE: Civil Engineering and Electrical and Mechanical Engineering, each semiannual, 1959--.

3. Canadian Journal of Technology. Ottawa. Monthly, 1944--.

2.9:P1200C Engineering.

1. Technische Mitteilungen Krupp. Essen. Irregular, 1933-43 and 1954--.

2. Progressus: Engineering Progress. Dusseldorf, 1920--. Bimonthly, German and English editions; about quarterly in Spanish, French

2.9:P1200C (Cont.)

and Russian; semiannual in Chinese, and annual in Portuguese, Italian and Polish editions.

3. VDI Zeitschrift. 36 issues per year, 1857--. Annual bibliographies, one to a subject, in most issues. VDI Jahrbuch (annual, 1954--), also carries bibliographies.

4. Ingenieur-Archiv. Springer. Quarterly, 1929--.

5. Werkstattstechnik: Zeitschrift für Produktion und Betrieb. Springer and VDI. Monthly, 1907-44, 1949--(Title varies).

6. Applied Scientific Research. NCO-TNO. Irregular, 1950--. A. Mechanics, Heat, Chemical Engineering, Mathematical Methods. B. Electrophysics, Acoustics, Optics, Mathematical Methods.

7. Zeitschrift für Metallkunde. VDI. Monthly, 1911--.

8. Forschung auf dem Gebiete des Ingenieurwesens. VDI. Bimonthly, 1935--.

9. Vide: Technique et applications. Paris. Bimonthly, 1946--; abstract section.

10. Memoires de la SICF. Quarterly, 1848--.

11. Vakuum-Technik. Esch/Taunus; 8 issues per year. (Formerly Glas-und Hochvakuumtechnik).

12. Russian Technical Literature. OECD. Quarterly, 1960--. Also carries title Russkaya tekhnicheskaya literatura. Editions in English, French and German.

2.9:P1200D Engineering.

1. Memoirs of the Faculty of Science. Kyushu. A. Mathematics, 1947--. B. Physics, 1960--. C. Chemistry, 1959--. Memoirs of the Faculty of Engineering, 1942--. Reports of the Research Institute for Applied Mechanics, 1953--. All irregular; all in English.

2. Inzhenerno-fizicheskii Zhurnal. Minsk. Monthly, 1958--.

3. Osaka Kogyo Gijutsu Shikenjo Kiho: Bulletin. IRI. Quarterly. Osaka Furitsu Kogyo Shoreikan Hokoku: Reports. Semiannual. Contents and summaries in English.

4. Bulletin of JSME. Tokyo. Quarterly, 1958--. In English.

2.9:P1200D (Cont.)

5. Memoirs of the Defense Academy (Japan): Mathematics; Physics; Chemistry; Engineering. Yokosuka, 1959--. Irregular. In English.

6. Journal of Scientific and Industrial Research. New Delhi. Monthly, 1942--.

2.9:P1300 Chemistry: Analysis (General). In a somewhat primitive sense, chemical analysis was mainly instrumental well over a century ago. Proliferation of increasingly sophisticated instruments has been dizzyingly rapid in the past few decades; there are many new periodicals, and old ones are changing their angle of attack.

1. Chemia Analityczna. Warsaw. Monthly, 1956--. Summaries in English.

2. Publications GAMS: Methodes physiques d'analyse. Quarterly, 1938--.

3. Analytical Chemistry. ACS. Monthly, 1929--. Has an instrumentation section. Collective indexes, 1929-43 and 1944-58.

4. Zhurnal analiticheskoi khimii. Moscow. Bimonthly, 1946--. Translated as Journal of Analytical Chemistry. Consultants, 1952--.

5. Chimie analytique: essais, mesures, controle. Soprodoc. Monthly, 1897--. Abstract section. (Title was Annales de chimie analytique, 1897-1946).

6. Analyst. London. Monthly, 1875--.

7. Zeitschrift für analytische Chemie. Munich. Irregular, 1862--.

8. Analyzer. Beckman. Quarterly, 1960--.

9. Zavodskaya laboratoriya. Moscow. Monthly, 1935--. Translated as Industrial Laboratory. USSR, ISA, 1958--.

10. Bunseki kagaku: Japan Analyst. Tokyo. Monthly. Contents and summaries in English.

11. Journal of Physical Chemistry. ACS. Monthly, 1896--.

12. Talanta: International Journal of Analytical Chemistry. Pergamon. Monthly, 1958--.

2.9:P1330 Chemistry: Analysis (Special Methods.

1. Microchemical Journal. New York. Quarterly, 1957--.

2.9:P1330 (Cont.)

2. Journal of Electroanalytical Chemistry. Elsevier. Monthly, 1959--.

3. Poraroguraﬁi: Review of Polarography. ES (Japan). Quarterly, 1953--.

4. Berichte der DRG. Semiannual, 1954--. Bibliographies.

5. Zeitschrift für physikalische Chemie. 9 issues per year, 1887--. Leipzig (DDR). Independent (West German) edition. Akademische. Monthly, 1954--.

6. Advances in X-Ray Analysis: Proceedings of the Annual Conferences on Applications of X-Ray Analysis. Plenum. Annual, 1960--.

7. Rheology: Theory and Applications. Academic Press. Biennial, 1956--.

8. Journal of Molecular Spectroscopy. Academic Press. Monthly, 1957--.

9. Chromatographic Reviews. Elsevier. Annual, 1958--.

10. Mikrochimica et Ichnoanalytica Acta. Spring. Irregular, 1914--. (et Ichnoanalytica added to name, 1963).

11. Journal de chimie physique et de physicochimie biologique. Paris. Monthly, 1903--.

12. Journal of Quantitative Spectroscopy and Radiative Transfer. Pergamon. Bimonthly, 1961--.

13. Advances in Analytical Chemistry and Instrumentation. Interscience. About annual,1960--.

14. Proceedings of the National Analysis Instrumentation Symposium. ISA. Annual, 1954--.

2.9:P1370 Chemistry: Industrial.

1. Electrochemical Technology. ES. Bimonthly, 1963--. New York.

2. Dechema Erfahrungsaustausch. Irregular, 1949--. Parts: Uebersichten; Abhandlungen; Einzelfragen; Uebungsaufgaben.

3. Industrial and Engineering Chemistry. ACS. Monthly, 1909--, with quarterly supplements, 1962--.

4. Chemical Engineering Progress. AIChE. Monthly, 1908--.

5. Canadian Chemical Processing. Toronto. Monthly, 1917--.

6. Journal of the ES. Monthly, 1902--. (Includes Transactions of the ES).

2.9:P1370 (Cont.)

7. Chemical and Process Engineering and Atomic World. London. Monthly, 1920--.

8. Journal of Chemical Physics. AIP. Monthly, 1933--.

9. Chemische Technik. Leipzig (DDR). Monthly, 1949--. Apparently no kin to defunct Chemische Technik (1928-45), which absorbed Chemische Apparatur (1913-42) in 1943 and still has some reference value.

10. Electrochimica Acta. Pergamon. Irregular, 1959--.

11. Denki kagaku. ES (Japan). Monthly. Includes abstracts and patent notices. Journal of the ES (Japan). Quarterly, 1933--. In English.

12. Berichte der BGPC (new title, 1963, of Zeitschrift für Elektrochemie); 10 issues per year, 1894--.

2.9:P1400 Testing materials. Like chemical analysis, materials testing has progressed far past the old machines for tearing, crushing or abrading samples to an early demise. In both cases one result is rapid obsolescence of the literature; constant attention to new literature is needed.

1. Nondestructive Testing. SNT. Bimonthly, 1942--. (Title was Industrial Radiography and Nondestructive Testing, 1942-49).

2. Mitteilungen der DMPA. Irregular (various titles), 1883--; Wissenschaftliche Abhandlungen der DMPA, irregular, 1925--.

3. Revue de metrologie pratique et legale: Poids et mesures. Paris. Monthly, 1923--. Decennial indexes.

4. Materials Research and Standards. ASTM. Monthly, 1961--. (Successor to ASTM Bulletin, 1921-60).

5. RILEM Bulletin. Paris. Irregular, 1954--. (Edition in English).

6. EOQC Bulletin. Quarterly, 1958--.

7. Test Engineering and Management. Oakhurst, N. J. Monthly, 1954--.

8. Applied Materials Research: International Journal of the Properties and Testing of Engineering Materials. London. Quarterly, 1962--.

9. Statensprovningsanstalt. Stockholm. Irregular. Berättelse, 1920--; Meddelande, 1921--; Cirkulär, 1922--. In English, or in Swedish with English summaries.

2.9:P1400 (Cont.)

10. CIRP Annalen. UNESCO and Springer. Quarterly, 1951--. (Mechanics, testing).

11. Schweizer Archiv für angewandte Wissenschaft und Technik: Zeitschrift für das Gesamtgebiet der Werkstoffkunde und Werkstoffprüfung. SVMT. Monthly, 1935--. Berichte des SVMT. Irregular, 1925--.

12. Materialprüfung. DVM and VDI. Monthly, 1959--. Papers in German, French or English.

13. Quality Assurance. Wheaton, Ill. Monthly, 1962--.

14. Microtecnic: International Review for Measuring and Gaging Techniques, Optics and Precision Mechanics. Lausanne. Monthly, 1947--. Editions also in French and German.

15. Proceedings of the SESA. Semiannual, 1943--.

16. Proceedings of the Symposium on Physics and Nondestructive Testing. ASTM. Annual, 1960--.

2.9:P1500 Metrology and Calibration. Metrology here simply means measuring (methods, devices, units). Entries are mainly generalities; measurement in some aspect runs all through this Guide. Calibration is interpreted in its customary meaning.

1. Revue de metrologie pratique et legale. Paris. Monthly, 1923--.

2. Monthly Review: Journal of the IWMA. Monthly, 1893--.

3. Bulletin of the NRLM. Irregular.

4. Scale Journal. Chicago. Monthly, 1914--.

5. Amtsblatt für das Eichwesen. Vienna. About 8 issues per year.

6. Technische Ueberwachung. Berlin. Semimonthly, 1897-1943 (title began with Zeitschrift fur die, 1897-1939). Suspended, 1943-59; resumed 1960--.

7. PTB Mitteilungen: Amts-und Mitteilungsblatt der PTB. Bimonthly, 1964--; successor to Amtsblatt der PTB, irregular, 1891-1963. Separate from the annual Wissenschaftliche Abhandlungen der PTB, 1949--. (Until 1949 the Bundesanstalt was the Reichsanstalt, PTA).

8. Technical News Bulletin. NBS. Monthly, 1917--. Includes lists of NBS publications.

2.9:P1500 (Cont.)

9. Boletim de Metrologia. Rio de Janeiro. Annual, 1955--.

10. Sbornik trudov VNIIM. Irregular, 1939--. (Title, 1939-40, Trudy VNIIM). Issues prior to 1939 were under the same title in French.

11. Metric Measures: Journal of Weights and Measures. New Delhi. Bimonthly, 1958--.

12. Report of the National Conference on Weights and Measures. NBS. Annual, 1916--.

2.9:P1550 Standards and Specifications. Standardizing agencies and societies issue great numbers of reports and bulletins, such as librarians call "separates", which are not entered in this Guide; but some of their indexes (e.g. from ASTM and DNA) are entered.

1. Informaciones IRAM. Irregular, 1936--.

2. DIN-Mitteilungen. DNA. Monthly, 1922--. New, amended and canceled German standards; standards scheduled for revision or cancellation; foreign standards; technical articles.

3. Normalisace. Prague. Monthly, 1953--.

4. Bulletin mensuel de la normalisation francaise. AFN. Monthly, 1951--.

5. South African Standards Bulletin. Pretoria. Monthly, 1947--.

6. ASTM Proceedings. Annual, 1899--. Quinquennial indexes, 1951--, with some entries from other ASTM sources. Fifty Year Index to Technical Papers and Reports, 1901-50; 1952; 230 pp.

7. Standardizatsiya. Moscow. Monthly, 1937--.

8. Annual Report: NBS, 1927--. (Title was Standards Yearbook, 1927-34).

9. Standardizarea. Bucharest. Monthly, 1941--. (formerly Buletinul de Standardizare).

10. ASTM Standards. Triennial, 1939--. Alternate title, Book of ASTM Standards. Separate annual index. Supplements between issues.

11. ISI Bulletin. Bimonthly, 1949--.

12. SAA Bulletin. Quarterly, 1938--.

2.9:P1550 (Cont.)

13. Bulletin Belge de Metrologie: Belgisch Bulletin van het Ijkwezen. Brussels, Monthly, 1941--.

14. Normalisatie. Delft. Bimonthly, 1925--.

15. Courrier de normalisation. AFN. Bimonthly, 1936--.

16. New Zealand Standards. Bulletin. Wellington. Quarterly, 1955--.

17. Index of Military Specifications and Standards. MB. Semiannual, 1951--, with cumulative monthly supplements, in 4 v.: Military, Army, Navy, Air Force.

18. Magazine of Standards. ASA. Monthly, 1930--. (Various earlier titles).

2.9:P1600 General Science. Some major journals covering science broadly are listed here because all science is more or less instrumental. In a dry run to see how instrumental, casual scanning of the French Academy's Comptes rendus over several years turned up many descriptions of instruments and shattered the cherished novelty of one American invention by at least four decades of priority.

1. Journal of the IIS. Quarterly, 1919--.

2. Naturwissenschaften. Springer. Semimonthly, 1914--.

3. Journal of Research. NBS, 1928--. Sections: A. Physics and Chemistry. Bimonthly. B. Mathematics and Mathematical Physics. Quarterly. C. Engineering and Instrumentation. Quarterly. D. Radio Propagation. Quarterly.

4. Priroda. Nauk. Monthly, 1912--.

5. Doklady AN SSSR. Nauk. 3 issues per month, 1933--. Selected sections translated as: Doklady: Earth Sciences Sections, AGI, 1959--. Soviet Physics: Doklady, AIP, 1956--.

6. Science. AAAS. Weekly, 1883--.

7. Atti della ANL: Classe di scienze fisiche, matematiche e naturali. Rome. Irregular, 1604--. Memorie della ANL. Irregular, 1870--. Rendiconti della ANL. Monthly, 1870--.

8. Zeitschrift für Naturforschung. Wiesbaden. Monthly, 1946--. A. Astrophysik, Physik und physikalische Chemie. B. Chemie, Biochemie, Biophysik, Biologie und verwandte Gebiete.

2.9:P1600 (Cont.)

9. Archives des sciences. Geneva. Monthly, 1948--. (The title, 1800-1947, was Archives des sciences physiques et naturelles).

10. Scientia (Milan): Rivista Internazionale di Sintesi Scientifica. Monthly, 1912--.

11. Comptes rendus hebdomadaires des seances de l'Academie des Sciences. Paris. Weekly, 1835--; from 1964, in 15 separate subject sections.

12. Nature. Macmillan. Weekly, 1869--.

13. Proceedings of the NAS. Monthly, 1915--.

14. Journal des recherches du CNRS. Quarterly, 1950--.

15. Philosophical Transactions of the RSL. Monthly, 1665--. Section A. Mathematical and Physical Sciences. Proceedings (1800--). Irregular.

16. Journal of the Franklin Institute. Philadelphia. Monthly, 1828--.

17. Nature, Science, Progress. Dunod. Monthly, 1873--.

2.10 Supplement. Late entries, contained in this Supplement, are not numbered 2.10. They carry the appropriate class number, followed by -S, which refers readers to 2.10.

2.1:A500-S Electroanalytical Abstracts. Basel. Bimonthly, 1963--.

2.2:B100-S

1. P. W. Becker and S. E. Becker, Bibliography on Masers, 1954-61 and supplement. Oak Ridge, 1963.

2. References on Fatigue: Bibliography, 1950-1954. STP9-F, ASTM, 1955.

3. Frederick I. Ordway, III, Annotated Bibliography of Space Science and Technology, With an Astronomical Supplement, 1931-1961. Arfor Pubs., Washington. Ed. 3, 1962.

2.3:1000A-S Max Sucher and Jerome Fox, editors, Handbook of Microwave Measurements. Wiley, 1963; 1183 pp. in 3 v.

2.3:1000C-S

1. O. Hörberg, FM-Teknik: Radioteknikerns handbok. Stockholm. Ed. 3, 1961; 604 pp.

2.3:1000C-S (Cont.)

2. A. G. Fuchs, A. N. van der Heijde and L. L. Mulder, Het verwarmingsboek: Leer-en handboek voor de verwarmingsindustrie. The Hague. Ed. 4, 1963; 496 pp.

2.3:1200A-S Franklyn W. Kirk and N. R. Rimboi, Instrumentation. Am. Tech. Soc., Chicago, 1962; 263 pp.

2.3:1300C-S Karl Steinbuch, Automat und Mensch: Kybernetische Tatsachen und Hypothesen. Springer. Ed. 2, 1963; 392 pp.

2.3:1330C-S Jean Marcus, Telecommande et telemesure appliquees aux engins speciaux. Eyrolles, 1962; 280 pp.

2.3:1400A-S

1. Allen Kent, Textbook on Mechanized Information Retrieval. Interscience, 1962; 268 pp.

2. P. Braffort and D. Kirschberg, Computer Programming and Formal Systems. Amsterdam, 1963; 161 pp.

3. H. N. Laden and T. R. Gildersleeve, System Design for Computer Applications. Wiley, 1963; 330 pp.

2.3:1400C-S C. E. Fröberg and B. Sigurd, Datamaskiner och deras användning inom vetenskap, administration och språköversättning. Lund, 1962; 147 pp.; bibliography.

2.3:1400D-S L. I. Gutemakher, Elektronnye informatsionno-logicheskie machiny. Nauk, 1960; 189 pp. Translated by Rosalind Kent as Electronic Information-Logic Machines. Interscience, 1963; 170 pp.

2.3:1430A-S Willis H. Ware, Digital Computer Technology and Design. I. Mathematical Topics, Principles of Operation, and Programming. II. Circuits and Machine Design. Wiley, 1963; 245+560 pp.

2.3:1430C-S Wolfgang Giloi and R. Lauber, Analogrechnen: Programmierung, Arbeitsweise und Anwendung des elektronischen Analogrechners. Springer, 1963; 423 pp.

2.3:1500-S Raymond L. Sanford and I. L. Cooter, Basic Magnetic Quantities and the Measurement of the Magnetic Properties of Materials. NBS Monograph 47, 1962; 36 pp.; bibliography.

2.3:1530A-S Sam'l J. Mason and H. J. Zimmerman, Electronic Circuits, Signals and Systems. Wiley, 1960; 616 pp.

2.3:1530C-S J. R. Acton and J. D. Swift, Cold Cathode Discharge Tubes. Academic Press, 1963; 351 pp.

2.3:1530D-S G. Ya. Mirskii, Radioelektronnye izmereniya. (Radioelectronic Measurements); Moscow, 1963; 528 pp; bibliography.

2.3:1550D-S

1. Boris I. Boltaks, Diffusiya v poluprovodnikh, Moscow, 1961. Translated by J. I. Carasso as Diffusion in Semiconductors. Academic Press, 1963; 378 pp.

2. Ya. A. Fedotov, Osnovy fiziki poluprovodnikovykh priborov (Physics of Semiconductors). Moscow, 1963; 653 pp.

3. S. M. Ryvkin, Fotoelektricheskie yavleniya v poluprovodnikov (Photoelectric Effects in Semiconductors). Moscow, 1963; 494 pp.; bibliography.

2.3:1560A-S

1. R. D. Middlebrook, Differential Amplifiers: Their Analysis and Their Applications in Transistor d-c Amplifiers. Wiley, 1963; 115 pp.

2. Transistor Circuit Design. Texas Instruments and McGraw-Hill, 1963; 523 pp.

2.3:1570-S Edw. Keonjian, editor, Microelectronics: Theory, Design and Fabrication. McGraw-Hill, 1963; 383 pp.

2.3:1600A-S Raymond L. Sanford and I. L. Cooter, Basic Magnetic Quantities and the Measurement of the Magnetic Properties of Materials. NBS Monograph 47, 1962; 36 pp.; bibliography.

2.3:1600C-S R. Rüdenberg, Elektrische Wanderwellen auf Leitungen und in Wicklungen von Starkstromanlagen. Springer. Ed. 4, 1962; 395 pp. (Stray currents)

2.3:1630C-S A. F. P. H. Bloemen and A. D. Mesritz, Elektrische meetinstrumenten en meetschakelingen. Haarlem. Ed. 7, 1963; 334 pp.

2.3:1670-S Ernest A. Lynton. Superconductivity. Wiley, 1962; 174 pp.

2.3:1730C-S F. Schröter, editor, Fernsehtechnik. Springer. I. Grundlagen des elektronischen Fernsehens, 1956; 772 pp. II. Technik des elektronischen Fernsehens, 1963; 586 pp.

2.3:1770A-S Leon S. Nergaard and M. Glicksman, Microwave Solid-State Engineering. Van Nostrand, 1964; 229 pp.

2.3:1770D-S M. B. Vinogradova and A. A. Semenov, Osnovy teorii

2.3:1770D-S

raspostraneniya ul'trakorotnykh voln v troposfere (scattering of ultrashort waves). Moscow, 1963; 192 pp.

2.3:1800-S

1. J. F. White, Flight Performance Handbook for Powered Flight Operations: Flight Mechanics and Space Vehicle Design, Empirical Formulae, Analytic Approximations and Graphical Aids. Wiley, 1963; 557 pp.

2. Manuel Fernandez and G. R. Macomber, Inertial Guidance Engineering. Prentice, 1962; 530 pp.

3. W. Priester, editor, Space Research. III. Proceedings of the 3rd International Space Science Symposium (1962). Wiley, 1963; 1275 pp.

4. Jorgen Jensen, G. E. Townsend, Jyri Kork and J. D. Kraft, Design Guide to Orbital Flight. McGraw-Hill, 1962; 896 pp.

2.3:1830A-S

1. Frederick I. Ordway, III, J. P. Gardner and M. R. Sharpe, Jr., Basic Astronautics: Introduction to Space Science, Engineering and Medicine. Prentice, 1962; 581 pp.

2. Frederick I. Ordway, III, J. P. Gardner, M. R. Sharpe, Jr., and R. C. Wakeford, Applied Astronautics: Introduction to Space Flight. Prentice-Hall, 1963; 449 pp.

2.3:1900A-S

1. Wm. E. Kuhn, Headlee Lamprey and Chas. Sheer, Ultrafine Particles (ES Symposium, 1961). Wiley, 1963; 561 pp.

2. Riyad R. Irani and C. F. Callis, Particle Size: Measurement, Interpretation and Application. Wiley, 1963; 166 pp.

2.3:2100A-S

1. M. Francon, Modern Applications of Physical Optics. Wiley, 1963; 114 pp.

2. Allan H. Lytel, ABC's of Lasers and Masers. Sams, 1963; 95 pp.

2.3:2300-S

1. Eric Schram, Organic Scintillation Counters: Counting of Low-Energy Beta Emitters. Elsevier, 1963; 212 pp.

2.3:2300-S (Cont.)

2. Geo. L. Clark, editor, Encyclopedia of X-Rays and Gamma Rays. Reinhold, 1963; 1149 pp.

3. D. M. Kheiker and L. S. Zeven, Rentgenovskaya difraktometriya. Moscow, 1963; 380 pp; bibliography. (X-ray diffractometry).

4. B. P. Golubev, Dozimetriya i zashchita ot ioniziruyushchikh izluchenii (Ionizing Radiation: Dosimetry and Protection). Moscow, 1963; 336 pp.; bibliography.

5. S. I. Babichenko, A. A. Bogdanov and L. S. Gorn, Kontrol'no-izmeritel'naya radiometricheskaya apparatura (Radiometric Dosimetry and Control Devices). Moscow, 1963; 150 pp.; bibliography.

6. Ya. B. Zel'dovich and Yu. P. Raizer, Fizika udarnykh voln i vysokotemperaturnykh gidrodynamicheskykh yavlenii. Moscow, 1963; 632 pp. (Impact radiation; hydrodynamics at high temperatures).

2.3:2400A-S Peter B. Jones, Optical Model in Nuclear and Particle Physics. Interscience, 1963; 118 pp.

2.3:2400B-S Neutron Dosimetry: International Symposium, Harwell, 1962. IAEA, 1963; 2 v., 652 + 615 pp.

2.3:2500A-S Richard W. Roberts and T. A. Vanderslice. Ultrahigh Vacuum and its Applications. Prentice-Hall, 1963; 190 pp.

2.3:2800B-S Alfred G. Gaydon and I. R. Hurle, Shock Tube in High-Temperature Chemical Physics. Reinhold, 1963; 307 pp.

2.3:2900C-S R. Comolet, Mecanique experimentale des fluides. Masson. I, 1961, 244 pp.; II, 1963, 442 pp.

2.3:3000A-S J. R. Van Wazer, J. W. Lyons, K. Y. Kim and R. E. Colwell, Viscosity and Flow Measurement: Laboratory Handbook of Rheology. Wiley, 1963; 406 pp.

2.3:3100-S Chas. T. Morrow, Shock and Vibration Engineering. I. Wiley, 1963; 384 pp.

2.3:3200A-S

1. Hans Bloemendal, Zone Electrophoresis in Blocks and Columns. Elsevier, 1963; 219 pp.

2. LaVerne S. Birks, Electron Probe Microanalysis. Interscience, 1963; 253 pp.

2.3:3200A-S (Cont.)

3. Bruno Breyer, Alternating Current Polarography and Tensammetry. Interscience, 1963; 288 pp.

4. Nathan H. Cook and E. Rabinowicz, Physical Measurement and Analysis. Addison, 1963; 312 pp.

2.3:3200C-S H. Neff, Grundlagen und Anwendung der Röntgen-Feinstruktur-Analyse. Oldenbourg. Ed. 2, 1962; 460 pp.

2.3:3300-S S. S. Gorelik, L. N. Rastorguev and Yu. A. Skakov, Rentgenograficheskii i elektronograficheskii analiz metallov (X-Ray and Electronographic Metallography). Moscow, 1963; 256 pp.

2.3:3500-S

1. Stacy V. Jones, Weights and Measures: An Informal Guide. Public Affairs Press, 1963; 141 pp.

2. Poverka priborov dlya izmereniya davleniya: Sbornik instruktsii. Izdaniye ofitsial'noe. Moscow, 1963; 374 pp. (Calibrating pressure gages).

2.3:3600-S Basil Banks, Ultrasonic Flaw Detection in Metals: Theory and Practice. Iliffe, 1962; 256 pp.

2.3:3700-S Standards and Practices for Instrumentation. ISA, 1963; 300 pp.

2.6:G100-S Albert J. Walford and L. M. Payne, Guide to Reference Material. LA, 1959; 543 pp. Supplement, Bowker, 1963; 370 pp.

2.6:G200-S Bernard M. Fry and F. E. Mohrhardt, Guides to Information Sources in Science and Technology. I. Space Science and Technology. Wiley, 1963; 579 pp.

2.8:Pa200-S Patent Classification Class Lists. USPO and OTS. PG 163,664, 1963; on microfilm, original classification 6 reels, cross references 7 reels. Design patent classification and cross references, 1 reel, PB 163,665.

2.9:P1200A-S Journal of Vacuum Science and Technology. AIP and AVS. Bimonthly, 1964--.

3. AUTHOR INDEX.

The author index includes:

a) Names of authors, editors, compilers and translators.

b) Names (often abbreviated) of corporate authors (government agencies, societies, institutions, companies, etc.). Abbreviations are interpreted in 1.10.

The subject index is the source of references for which no author is listed. Since names of commercial publishers are omitted, this occurs most frequently in entries for their periodicals.

No distinctions are made as to national origin of corporate authors; entries are by the name (or its abbreviation) of the corporate entity. Locations (not mailing addresses) are entered with the names in 1.10.

4. SUBJECT INDEX.

Subject entries are chiefly based only on titles; deeper penetration is provided for a few obscure titles. The subject classification has a different function and could not serve as a subject index; each supports the other. The index provides analytical capacity for disclosing topics concealed in the classification by overlap among classes, or by multiple interests in one entry.

Page numbers are not indicated; entries by class number and item number facilitate exact location of entries through their numerical sequence.

Cross references are of two conventional kinds:

See (for near identities), e.g. Lighting. See Illumination.

See also (broader to narrower terms, or vice versa), e.g. Navigation. See also Avigation.

Since cross references cannot predict all the synonyms which will be sought, a guessing game goes on forever between indexers and searchers. Sometimes perversely called an effort by each to outguess the other, it is actually an inguessing game. Indexers seek to read in inquirers' minds the terms they will seek; searchers seek to read in indexers' minds their most probable choice among entries. Skill in this game can and should be cultivated on both sides. Practice and patience are commended to users of this index.

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